# Textile World

VOL. 86, NO. 2—ESTABLISHED 1868

## CONTENTS FEBRUARY, 1936

DOUGLAS G. WOOLF
*Editor*

William B. Dall.....*Managing Editor*
Edwin D. Fowle.....*Associate Editor*
Winn W. Chase.....*Assistant Editor*
John Black.....*Assistant Editor*
James A. Austin...*New England Editor*
William G. Ashmore...*Southern Editor*
Paul Wooton. *Washington Correspondent*

A. P. GUMAER.....*Manager*

**MANAGEMENT** It Doesn't Make Sense (*Editorial*) ..... 51
The Editor Says ..... 52
The Editor Presents, This Month and Next ..... 53
Retroactive Talk Tangles AAA Mess Again ..... 54
New England, Aroused, to Remove Purely Local Handicaps ... 58

**MERCHANDISING** Full-Fashioned Hosiery Standards ..... 60
Rayon's New High Record in U. S. and World Output ..... 61
Knitters Seek Novelties to Hold Swimsuit Market ..... 86

**MATERIALS** Chemicals and Wool—Effect on Tensile Strength ..... 70
Vat Dye Penetration Improved by Unorthodox Means ..... 78

**MEN** Textile Personalities ..... 56
Hearings on Ellenbogen Bill ..... 57
Silk Travelers Association Has 20th Anniversary ..... 79
The Overseers' Corner ..... 92
The Personal Page ..... 96

**MILL ENGINEERING** Finishing Plant Gets More Steam via Automatic Stoker ..... 77
New Painting Techniques Affect Mill Economies ..... 80
New Machinery and Processes ..... 98

**METHODS** Trouble at the Let-Off—a Neglected Motion on Loom ..... 62
Variable Speed Spinning at Clark Thread Co. ..... 64
Reel-Type Roll Improves Penetration in Warp Sizing ..... 67
Constructions, Finishes and Uses of Staple Cotton Goods ..... 68
Practical Suggestions for Woolen, Worsted Loomfixers ..... 71
Humidity Requirements for Rayon and Acetate ..... 72
Split-Foot F.F., Lately Sidetracked, Is Returning ..... 74
Worsted Grandrelles—Yarns Plied in Contrasting Colors .... 76
Chart System for Silk or Rayon Weave Room ..... 82
Color in Design—To Obtain Harmony and Avoid Discord .... 83

**DEPARTMENTS**

The Overseers' Corner ..... 92
Questions and Answers ..... 94
Personal Page ..... 96
New Machinery and Processes ..... 98
New Publications and Business News 114
TEXTILE WORLD Analyst ..... 91
Business Literature ..... 99

**INDUSTRY BRANCHES**

Cotton Digest ..... 100
Wool Digest ..... 102
Rayon Digest ..... 104
Silk Digest ..... 106
Knitting Digest ..... 108
Processing Digest ..... 110
Engineering Digest ..... 112

McGRAW-HILL PUBLISHING CO., INC.
330 West 42d Street, New York, N. Y.

James H. McGraw, Jr., *Chairman* — Malcolm Muir, *President* — James H. McGraw, *Honorary Chairman*
Henry G. Lord, *Vice-President* — B. R. Putnam, *Treasurer* — D. C. McGraw, *Secretary*

**Bragdon, Lord & Nagle Division**
Frank L. Nagle, *Chairman* — Henry G. Lord, *President*

Boston.....1527 *Statler Bldg.* — Greenville, S. C.....*312 Woodside Bldg.*
Philadelphia.....*16 South Broad St.* — Atlanta.....*1105 Rhodes-Haverty Bldg.*
Washington.....*National Press Building* — Chicago.....*520 N. Michigan Ave.*

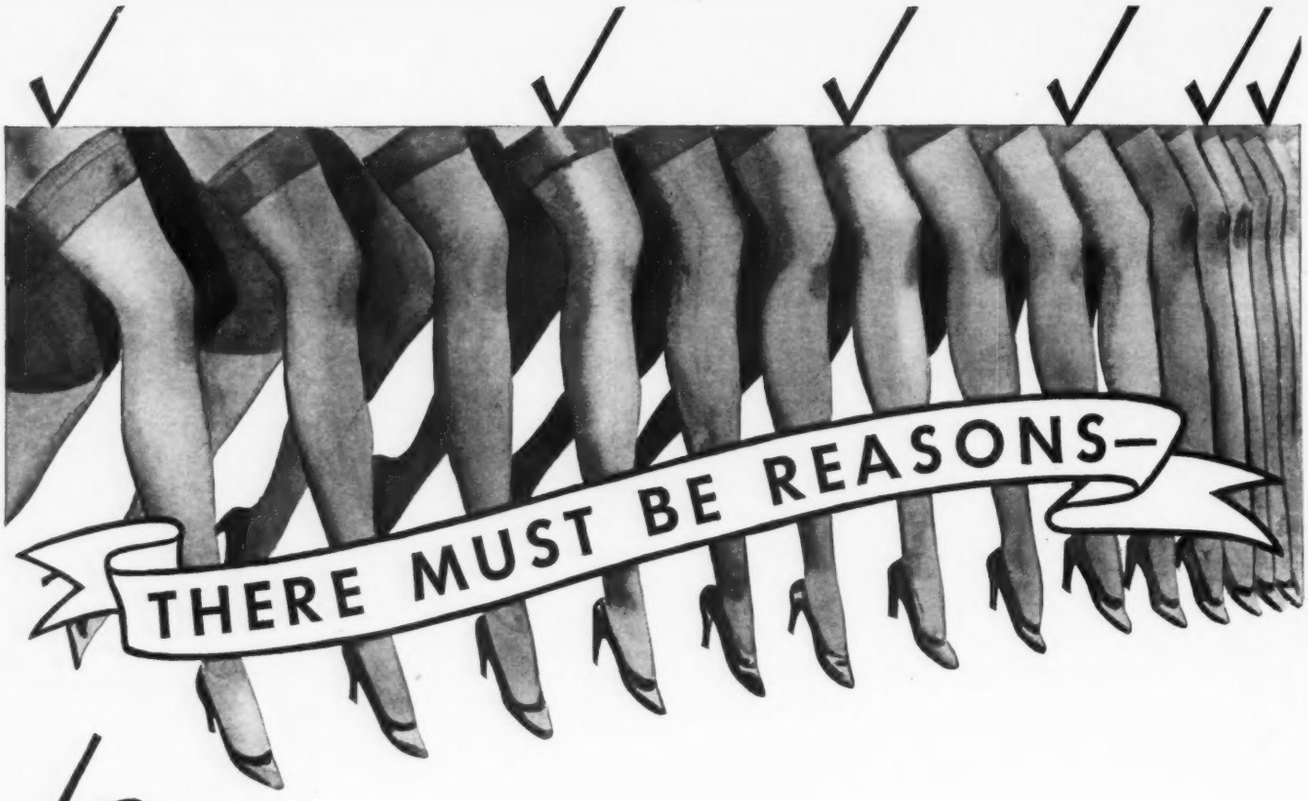
Contents copyrighted, 1936, by McGraw-Hill Publishing Co., Inc.

TEXTILE WORLD

(Formerly *Textile World Journal*) with which are combined *Textiles*, *Posselt's Textile Journal* and *Textile Advance News*. Published monthly, United States and Possessions, and Canada, $3 per year; all other countries, $5, U. S. currency or 20 shillings. Single copy, 35 cents, excepting special issues.

**Of this issue 10,979 copies were printed.**

*Member of Audit Bureau of Circulations*
*Member of Associated Business Papers, Inc.*




# Why... 1 Pair out of 3 is made of INDUSTRIAL yarns

• Every third pair of viscose rayon hosiery is made of a yarn produced by Industrial Rayon Corporation. This remarkable record of leadership has been attained . . .

*Because* "Industrial" yarns are soft, strong and uniform . . .

*Because* hosiery manufacturers know that these qualities are ideal for knitting rayon hosiery . . .

*Because* consumers prefer hosiery that is ringless, beautiful and long wearing.

The hosiery field gives only one example of the leadership of Industrial Rayon Corporation. Our Research Department is constantly perfecting new yarns which excel in every branch of the textile industry.

INDUSTRIAL RAYON CORPORATION
CLEVELAND, OHIO

**SPUN·LO ★ PREMIER ★ DUL·TONE**

# Textile World

February, 1936

*Editor:* DOUGLAS G. WOOLF

# IT DOESN'T MAKE SENSE

THE trouble with the operation of the National Labor Relations Act, so far as we have been able to observe it in the textile field, is that it just doesn't make sense. The discord created by the succession of charges, counter-charges and hearings is exactly the opposite from the spirit of harmony which a "labor relations" act should be expected to produce.

What is wrong? Obviously, the reason for this contradiction is that the act was not designed to improve employer-employee relations, but to extend labor unionism.

Now we admit freely that, from the standpoint of organized labor, the last-named end justifies the means —and is, in fact, synonymous with improved labor relations. To all other groups, however, it is apparent that, in an industry like textile manufacture where such a small percentage has shown a desire to join labor unions, the attempted forcing of unionism upon employees is not justified as in the interest of the operatives themselves, the industry, or the general public. If the workers were being thwarted in their desire to join the UTW, the act would be justified. The fact is, however, that that union has had completely free opportunity, for years, to organize this industry, and has failed because of the inadequacy of its own leadership.

■

So much for the background. Specifically, how does the act operate in practice?

First, it insures continual warfare because anyone with a grievance can bring a complaint—and we do not believe we have to prove that there is never a shortage of people with grievances, in any walk of life. Consequently, as a result of this "labor relations" act, the points of difference which always have existed, and always will exist, are lifted out of their local status and become national issues. That, as a means to improved relations, is one of the things about this act that doesn't make sense.

Second, when the complaint reaches the hearing stage—as it so often does—the chances of a really fair shake for the company against the union are rather slim. Although in certain cases the representatives of the National Labor Relations Board have tried to exercise the semi-judicial function which we believe is the intent of the act, in the great majority of cases their attitude has been that of prosecuting attorney, with the company as the defendant. That, too, doesn't make sense.

Finally, when and if an election is held, the chance of a square deal, this time for the employees, is again remote. A certain number vote UTW because of fear of reprisals; the experiences in the 1934 strike showed that this is not an exaggeration. A great number of others, as one manufacturer pointed out recently, are of the opinion that they have to vote for either the UTW or some other organization to represent them—and, since they desire to bargain individually, they stay away from the polls. The result is apt to be that less than half the employees of a plant decide this momentous question for the majority—and that even of the minority a considerable group does so under pressure. That, again, doesn't make sense to us.

■

We know that a lot of technicalities could probably be raised by both the NLRB and the UTW in answer to the above arguments. But we are interested in the operation of the act not academically but from the practical standpoint of its effect upon labor relations in the textile industry. From that standpoint, we are confident that a synthetic situation is being created by the application of the act in this industry, and that employers, employees and the public will be the losers.

To keep the record straight, it must be recalled that the National Labor Relations Act is actually the successor of section 7(a) of NIRA. Both are based on the fallacy that an increase in union membership is in itself an essential factor in recovery. No matter what one may think, individually, about organized labor, it must be evident that the *forced* unionization of industry retards rather than aids recovery.

The truth is that the A. F. of L., in forcing 7(a) upon the country, exacted that as its price for cooperation in the recovery program. The NLRB represents a continued payment of that price.

# THE EDITOR SAYS:

## *Mr. Ellenbogen Proposes*

EACH time we read the Ellenbogen Bill, or an abstract of its provisions, we become more amazed that a man or group of men would lay themselves open to ridicule by publicly sponsoring such a monstrosity. Apparently, every prohibition that has ever been proposed for industry, and every penalty that has ever been conceived, have been dumped into one bill and stirred.

We are not concerned with the constitutionality of the proposed measure. Even if it were entirely constitutional, it would still be a monstrosity.

We *are* concerned with the effect of such an act upon the textile industry. It would hog-tie manufacturers so that they wouldn't have the least vestige of freedom left. It would close interstate traffic, the mails, and Government loans and contracts to persons who didn't live up to each of the scores of things the bill sets up as standards. It would club the industry into submission by fines "not exceeding" $100,000 and imprisonment "not exceeding" one year for *each offense*.

The effect of all this upon the welfare of employees of the textile industry can be imagined. And yet the bill is sponsored by an organization supposedly representing the interests of the workers.

The bill is a joke—but a sad one. It is disheartening to realize that such a piece of legislative tomfoolery can reach a public hearing and engage the time of members of Congress, manufacturers, and Governors of States. It represents the low ebb of Congressional sanity.

■

## *Two Facts Instead of One*

WE write this just at the beginning of the silly season. Congress has re-convened, and hearings on the Ellenbogen bill are on. Without waiting for the conclusion of those hearings, we are bold enough to hazard the guess that there will be paraded the fact that U. T. W. paid membership, as demonstrated by voting strength at the A. F. of L. convention, went from 38,700 in 1934 to 79,200 in 1935.

The 38,700 item was recorded at a time when the U. T. W. was talking about representing some four or five hundred thousand workers. (And they almost did force that number from their jobs for a few weeks, believe it or not!) The 79,200 item would be cited as a 100% gain.

So, to keep the record straight, let it be set down here that there are approximately a million workers in the primary textile industries. Less than 8% representation is not what we would call the voice of the workers.

■

## *A One-Man Crusade*

IF WE had the time and the money, we would start a crusade for the rationalization of convention addresses. Having very little of either, we shall nurse our grouch by means of an occasional item such as this one. We do not expect to affect the national scene at all. However, if we get under the skin of just one prospective speaker at a textile meeting, we shall consider this printer's ink well spent.

In the first place, we regard long addresses as one of humanity's worst curses. We particularly abhor the orator who promises that his talk will be brief—and then, after an hour or more of conversation, begins to sum up. We could stand a long speech if the speaker announced in advance that he would be on his feet for, say, 57 minutes. We could then take a walk for 50 minutes, and return for the summing up. By and large, however, we believe that there is never—or hardly ever—an excuse for an address lasting more than fifteen minutes. If orators—the best of them—could know how boring they become as they drift into the second and third and fourth quarter-hour, they would be in this crusade themselves.

Second, we would do something about the show that is put on when some personage is on the platform. We yearn for the days when a man could get up and say his say in a normal way without attack from radio announcers and photographers. If broadcasting and photography must be served, why not have a private session for those purposes? Why rob conventions of the small amount of spontaneity they possess at the best?

This sounds like the outburst of a crank. Well, we *are* a crank on this subject.

■

## *Modernization Is Here*

ONE of the principal thoughts we brought home from a trip through textile sections last month was the realization that plant modernization *is* going on. We cited that as one of the three major needs of the industry, in our Editorial Inventory in the January issue. Evidently, others agree with us.

Mills in the South, mills in New England, mills in the Middle Atlantic States, and mills everywhere are being "tuned up." ("Tuning Up," incidentally, is the theme song of our Annual Review and Forecast Number to be published Feb. 28.—*Advt.*)

Sellers of machinery, accessories, and supplies to the textile industry are due for a good year in 1936. More important still, those textile manufacturers who are supplying this business are also in for a good year.

The others? Well, they may know their stuff—but we can't help being a little sorry for them.

## AAA in This Issue


*Page*

AAA Aftermath (*Feature Story*) . . . 54

Threat of New Taxes (*Editorial*) . . 55

Process-Tax End Reflected in Prices (*Analyst*) . . . . . 91

# THE EDITOR PRESENTS:

## *This Issue*

**AAA Mess:**

Read 'em and weep—on page 54. We can remember many a pesky situation in our time, but for unadulterated grief we think this AAA mess from the beginning, and now way past the "end," sets an all-time record.

**Mr. Ellenbogen:**

Here's another Washington product with a high nuisance-value rating: the Ellenbogen bill. Everyone knows it hasn't a chance in the world to pass, but nevertheless there must be days of hearings on it. . . . Oh, well, it gives Dr. Murchison, Arthur Besse, Roy Cheney, Peter Van Horn, Earl Constantine and other textile men a chance to see Washington—and that's an opportunity they have long sought. (See page 57.)

**Not Counted Out:**

New England communities have decided that it is better to do something about the textile situation than to take it on the chin passively. Some of the actual achievements and future possibilities resulting from the new spirit are described on page 66.

**Rayon Marches On:**

We spoke about records a while back—but this has to do with a far more creditable type of record: the new mark which rayon production set in 1935. You will find a concentrated dose of statistics on page 61.

**More Doggone Trouble:**

The let-off has probably been more neglected than any other part of the loom, with the result that it is responsible for more cloth defects than the other weaving motions. Mr. Moberg gives the only answer to the problem, starting on page 62.

**More Yarn per Day:**

Production at a Clark Thread plant has been increased 18% by the installation of variable-speed spinning. One of our editors has looked in on this mill, and on pages 64-66 tells what he saw.

**Go Back, Dear Reader:**

If you failed to examine the first instalment of our new series of articles on the constructions, finishes, and uses of staple cotton fabrics—it appeared in January—you can nevertheless digest without difficulty or discomfort the second instalment on pages 68 and 69. The series is of such great educational value that absolutely no instalment should be missed.

**Chemicals and Wool:**

It has been taken for granted by some that when wool is boiled in a dye-bath, it suffers continuous deterioration at a rate which is in direct proportion to the length of time of treatment. Results of tests to determine the actual degree of deterioration blast this theory and reveal some facts which are of interest to all who are engaged in the wet processing of wool. (Page 70.)

**Brakes, Shuttles, Reeds:**

After far too long an absence Benjamin F. Hayes, the loomfixer who had the honor of starting up the first loom in the Wood Worsted Mill, in Lawrence, Mass., returns to our columns with one of his extremely practical articles—page 71.

**Splitting the Foot:**

The advantages of having the sole of a stocking a completely separate fabric from the instep are recognized, and now that the first shock of the demand for three carriers to produce the instep fabric has worn off, at least one full-fashioned mill is combining ringless and split-foot knitting. M. C. Miller begins a discussion of split fabric in full-fashioned hosiery on page 74, the first treatise on the subject ever written.

## *Annual Issue*

***Date:*** **February 28, 1936.**

***Theme:*** **Tuning up for Profits.**

**This means tuning up textile plants, tuning up industry management, tuning up individual management, tuning up employee relations, tuning up textile merchandising. This is a psychological time for such a theme—just as the industry is starting on what promises to be a more profitable era. The feature section of our Annual Review and Forecast Number will help each individual reader in his struggle to get his share of those profits.**

**In addition, special sections of the Annual will be devoted to the seven major divisions of the industry: Cotton, Wool, Rayon, Silk, Knit Goods, Processing, and Engineering. Each of these sections will cover the economic and technical trends in the respective branch of the industry, and will include a department of practical helps for the operating men in each division.**

***Eight Magazines in one: the 1936 Annual of TEXTILE WORLD, Feb. 28.***

**Will It Work?**

An unusual method of processing cotton piece goods to obtain better penetration of vat dyes is described on page 78. It gives good results in one dyehouse. Will it work in yours? After you have read the article and tried out the method proposed, we should like to know what results you obtained.

**Save the Surface:**

White paint on upper walls and ceilings improves working conditions and results in increased output of work. Fume-resisting paint protects wood and metal against corrosion. Paint plus air-conditioning overcomes the mildew problem in weave and slasher rooms. On pages 80 and 81, A. H. Kennedy gives some helpful pointers on practical painting problems.

**Discord or Harmony:**

The way in which colors are selected and arranged determines in large degree the effectiveness of woven and printed designs. How to avoid discord and obtain harmony are shown in actual colors starting on page 83.

■

## *March Issue*

**They're Too New for Me:** "Ball and roller bearings are new in my department," many operating executives say, "I don't know how to take care of them." Always the most important matter in the care of any bearing is its lubrication. In March we discuss the lubrication of ball and roller bearings and also illustrate the many applications of such bearings to textile machinery.

**Carders, Frown No More:** Soft, bulky laps from the picker are usually frowned upon by cotton carders. However, an interesting test to be reported in the March issue indicates that such laps, properly made, are likely to be evener than those which are slim and tight.

**Plant Expansion:** In the middle of the depression, a finishing company embarked on a planned program of plant expansion. In the first of two articles, the engineer in charge of the work will describe how the initial stage was completed. (March issue.)

**Shaded Woolens:** "The dyeing must be wrong," said the finisher. "The fulling is to blame," said the dyer. Which, if either, process was at fault? See our March issue for the answer.

**Beauty Culture:** Wrinkles in rayon and acetate taffetas cause wrinkles to appear on the finisher's face. "How to Avoid Wrinkles" might be the title of one of our articles scheduled for March.

# AAA Mess

*By Douglas G. Woolf*

## Nearly untangled when retroactive tax talk tangles it again

THE headache of the century—the AAA—seemed to be approaching a cure last month when suddenly its transformation into a stroke of apoplexy was threatened by the rumored imminence of a retroactive excise tax to replace the unlamented processing tax If, between the heading and the first sentence, we seem to have mixed our metaphors, we should explain that everything connected with this cock-eyed mess is mixed—and a straight story would be out of character.

We imagine Dr. C. T. Murchison would lean toward the more grim headache-apoplexy metaphor because he stated on Jan. 24 that this "new shock" of retroactive taxes, if it materializes, "might well complete the ruin of scores or even hundreds of weak mills." Ordinarily a mild-mannered man, the Doctor revealed wholesome wells of resentment when he declared:

"If details of the Administration's new agricultural program are reported accurately, the cotton-textile industry faces the gravest crisis in its history.

"Apparently seeking to circumvent the plain mandate of the Supreme Court, the authors of the new plan have hit upon a subterfuge that may bankrupt a large section of the industry, throw thousands of mill workers into bread lines and rob ultimate consumers of the benefits, in lower-priced cotton goods, they were entitled to expect as a result of the Court's AAA decisions.

"The tax has been declared invalid. Moreover, the Supreme Court went further and, over the Government's objection, ordered the funds held in escrow to be returned forthwith to the mills. Automatically the mills became liable to their customers to make the pledged refunds from the money so recovered.

"Now under the Government's purported plan, the mills, already obligated to refund to their customers, would be compelled to pay over an equal amount to the Government. Probably not more than one-half of the more than 1,200 mills in this industry could withstand the strain of such an extortion."

The urgent problem created by this possibility of retroactive taxes was considered at a joint meeting in Washington, Jan. 29, of directors of Cotton-Textile Institute, American Cotton Manufacturers Association and National Association of Cotton Manufacturers. Despite the serious threat involved, it was resolved that:

**"It is the sense of this meeting that on sales contracts carrying a processing tax clause which provides for the adjustments or credits to the buyer in the event of invalidation of the processing tax, cotton textile mills make adjustments or credits to such buyer in accordance with the terms of such clause as promptly as practicable."**

Answering our request for best dope from Washington on this situation, our office there reported that Treasury fiscal experts were considering a 4% general retroactive manufacturers' excise tax without exceptions and, alternatively, an increase in normal individual income tax to 8%, with exemptions for married persons reduced to $1500 and single persons to $750.

*At the Charlotte meeting—left to right, W. H. Suttenfield, president, Southern Combed Yarn Spinners Association; Thomas H. Webb, president, American Cotton Manufacturers Association; S. P. Cooper, chairman, Carded Yarn Group of Cotton-Textile Institute.*

*Dr. C. T. Murchison (left), president, Cotton-Textile Institute, and B. B. Gossett (right), president of Chadwick-Hoskins Co. caught by the camera at the Charlotte meeting.*

"These proposals, of course, ignore political dynamite in election year," states our Washington correspondent. "The excise tax, which is tantamount to a sales tax, would be even more dangerous than increasing the levies on low income brackets. Members of the House Ways and Means Committee individually are opposed to any tax bill this session but some sort of bill seems unavoidable. It is impossible to forecast what form it will take."

Of paramount interest is the question whether the rumored excise tax, if it materializes, is to apply generally to all manufacturers, in accordance with the Treasury's views, or only to processors of materials involved in AAA benefits, as more generally reported in the industry. Little reliance can be placed on any prospect that the Treasury's desire to establish a broad base for new revenues will prevail over the political desire to confine new taxation within as narrow limits as actual revenue needs will permit.

So much for the present threat from new legislation.

The earlier chapters of the AAA aftermath were less forbidding ones. In fact, there was a certain brilliance about them. This was true particularly of the promptness with which the cotton-textile industry acted to meet the emergency created by the AAA decision. Beginning as soon as decision was known, a series of conferences resulted next day in development of a formula recommended as equitable for buyers and sellers alike.

The decision presented the industry with three different problems: (1) the handling of invoices on the undelivered portions of existing contracts; (2) the handling of refunds to buyers of taxes placed by the mills in escrow with courts; and (3) new contracts.

The formula proposed originally by the Recovery Committee of the Association of Cotton Textile Merchants of New York, approved by the association, and concurred in by the Cotton-Textile Institute, dealt with these three points substantially as follows:

1. That in making price adjustments on undelivered portions of existing contracts, sellers protect themselves against losses as the result of new taxes or inability to obtain refund of taxes placed in escrow. The actual wording of the clause recommended for use on such invoices is:

*"This invoice has been adjusted by credits in accordance with the purchase contract under which it is issued, upon the assumption that the decision of Jan. 6, 1936, of the Supreme Court of the United States in the processing tax case finally relieves the seller of all obligation to pay any Federal excise tax with respect to the merchandise covered hereby; in any other event seller reserves all rights under such contract."*

2. That in agreeing to the ultimate refund of taxes placed in escrow, buyers and sellers shall bear pro rata the cost of obtaining the release of such funds from escrow.

3. That new contracts shall bear the so-called "up-and-down" clause which, protecting both buyers and sellers in the event of new federal legislation affecting any element of the seller's cost, has been generally accepted by the trade for the last two and one-half years. The wording of that clause is:

*"Prices on any undelivered portion of this contract are subject to increase or decrease by the amount that any new Federal legislation affects seller's costs."*

International

*William M. Butler, one of the receivers of the Hoosac Cotton Mills whose appeal to the courts brought about the AAA decision.*

## *The Charlotte Meeting*

One of the outstanding demonstrations of industry solidarity was the meeting held at Charlotte, N. C., Jan. 13, at which these clauses were endorsed, as was the Cotton-Textile Institute's move for formal agreement to continue to maintain code provisions.

This meeting was an all-star affair. Attended by mill executives representing 3,500,000 spindles, it was a combined activity of the Southern Combed Yarn Spinners Association and of the Carded Yarn Group of the Cotton-Textile Institute, plus the cooperation of the American Cotton Manufacturers Association. Those who participated in the arrangements for, and conduct of, the meeting, included W. H. Suttenfield, president, and Fred M. Allen, secretary, of the Combed Yarn Skinners Association; S. P. Cooper, chairman of the Carded Yarn Group; Dr. C. T. Murchison, president of the Cotton-Textile Institute, and Sydney P. Munroe, assistant to Dr. Murchison; Thomas H. Webb, president, and W. M. McLaurine, secretary, of the American Cotton Manufacturers Association; Frank E. Slack, president of the Association of Cotton Yarn Distributors; and E. O. Fitzimmons and R. F. Howell, field representatives of the Institute.

---

**WHEN we first heard rumors of a retroactive excise tax to take the place of the defunct processing tax, we thought they were just hallucinations of an industry that had been forced by AAA developments into a bad case of the jitters. It was soon evident, however, that those who brought these reports back from Washington might be crying before they were hurt—but had pretty good reasons to expect to be hurt.**

**As we write this, we do not know, of course, what the final outcome will be but we do know that the threat of a retroactive tax appears to be a real one.**

**It seems almost incredible. The original decision of the Supreme Court and the subsequent ruling on funds held in escrow so clearly established the unconstitutionality of the processing-tax idea, that any attempt to evade this by substituting practically the same tax with a different name would seem to be a little too bald to be even considered.**

**Actually, the Administration is facing a crisis in this matter. If it pushes such a plan, or even permits such a plan to take shape, the effect upon the Administration's reputation will be serious. As for the textile industry, the retroactive feature of the proposed legislation, would be, as pointed out by Dr. C. T. Murchison, fatal to many mills.**

**We dislike to blame the Administration for something it hasn't done as yet, but in this case the industry cannot afford to wait until it is hurt before it cries. This particular hurt, if it materialized, would be such a serious one that the industry would be left too weak even to cry. Consequently, it must make every attempt, now, to prevent passage of such legislation.**

* * *

**It is to the everlasting credit of the cotton textile industry that, although faced with the threat of insolvency as outlined above, its leaders met at Washington, Jan. 29, and decided to assume the full risks involved and to recommend to members of the industry the adjustment of refunds or credits to their customers as promptly as practicable. This is the industry's answer to Secretary Wallace's characterization of the Supreme Court's order for the return of funds in escrow as "probably the greatest legalized steal in American history."**

**The industry has made good on its contractural arrangements with its customers, even if by so doing it invites destruction. If there is any "legalized steal," cotton manufacturers will not be the thieves. Whether they are to be the victims depends upon Congress—and, after that, most fortunately, upon the Supreme Court.—*Editor.***

---

# TEXTILE PERSONALITIES

WHEN you sit in the multi-windowed office of Max. C. Miller in Manville, R. I., and gaze out over the rolling country, you wish that you, too, were a knitting-machine inventor and designer and could do your work far from office buildings, subways and smoke. His home and 50-acre farm are just across the road from the experimental shop, and he raises MacIntosh apples with the same attention to detail that marks his articles in TEXTILE WORLD. His orchard is one of the few in the State that has been rated over 96%.

Mr. Miller's father and grandfather were knitting - machine specialists. He is a German citizen, born in Zyrardow, Russia, of German parents, received his education here and abroad, and, after serving as draftsman in various German plants, came to this country and spent a year with U. S. Steel Corp. at Ensley, Ala. In 1910 he went with Scott & Williams, in 1911 with Acme Knitting Machine Co., in 1912 with Jenckes Knitting Machine Co., and in 1920 organized a shop of his own in Pawtucket, R. I. In 1924, Mr. Miller formed a partnership with Edward J. Ziock, son of the founder of the Burson Co., and at that time the present experimental laboratory at Manville was built. He has more than 60 United States and foreign patents issued to him, with others pending, has served as patent attorney for many manufacturers and attorneys, has published one book, "Principles of Knitting," and has another, "Principles of Full-Fashioned Knitting," on the way. At present, he is associated with foreign machine builders and is vice-president of Knitting Machines Corp., which was recently formed as a holding company for certain of his patents.

Yes, it is fine to be able to work in the pleasant country side, but you have to be a bit of a genius to get away with it.

"FROM Office Boy to General Manager" would be the title of this sketch if Horatio Alger, Jr., were writing it. For it was as office boy that Luther Hodges served Carolina Cotton & Woolen Mills, Spray, N. C., in 1910 and 1911, between school years. Last October, at the age of 37, he became general manager of all the mills of the Company. He confessed to us that he was the "worst office-boy" the company ever had—and apparently had some good authority for the statement. However he wasn't fired, and continued to work in the mills in vacations while he attended University of North Carolina. After graduation in 1919 he became nominally secretary to the late L. W. Clark, who was then general manager. That Mr. Hodges did other than secretarial work is demonstrated by the accompanying snapshot, taken at that time. He says he is proud of the dirty breeches, which he got while working through the mill.

From the very beginning, he was interested primarily in employee relations and continued his emphasis on the personnel end even after he entered production-control work in 1923. It is this phase of his career which appeals to us most strongly—because we feel that too few executives come up by that route.

When Mr. Clark died in 1932, Luther Hodges became co-manager with W. D. Carter and then, as noted above, general manager last fall. His hobbies include two daughters, travel, golf, and Rotary (having been district governor for North Carolina and later one of the four international committeemen sent to Vienna in 1931).

Incidentally, he can be cited as a home-town boy who made good—since he has grown up in Spray. Says he picked that place to work in, as he thought one's home-town would be the toughest spot in which to make good.

FRANK I. NEILD, president of Neild Mfg. Corp., New Bedford, president of the National Association of Cotton Manufacturers, and vice-president of the Cotton-Textile Institute, keeps in trim for competition by horseback riding and swimming. Not even zero weather can keep him off a horse, though it admittedly does keep him from the surf. A still picture doesn't do him justice. What is really needed is a sound movie of Mr. Nield telling one of the stories that made him a favored member of the old Code Authority.

Born in New Bedford, Mr. Neild has confined his activities to that city. Concerning his education, he says that high school and New Bedford Textile School completed the formal part, but that he has had to learn a lot since then. He started off with the Grinnell Mfg. Corp. in 1904 and worked mostly in the card room until 1909, when he went with Nashawena Mills a few months and studied machinery. In 1910, his father started construction of the present Neild plant and our subject labored there until 1914, when he went with Soule Mill as superintendent for a year and a half, returning to Neild Mfg. Corp. as superintendent in 1916. Again in 1926 Mr. Neild left, this time to become agent for Booth Mfg. Co., but his father died in May of that year and he returned to become president and agent of Neild Mfg. Corp., as well as general manager of Bristol Mfg. Corp., a position also held by his father. Since that time, Mr. Neild has stayed with the home mill (Bristol was later liquidated), although he has been increasingly called upon to serve his chosen field in industry-wide activities.

# *Ellenbogen Bill*

## Hearings draw textile leaders to Washington again

**THE hearing on the Ellenbogen bill was not a pretty performance. It made this observer sad, rather than angry —sad that such a show can be put on under the auspices of a democratic form of government.**

**It was a tough set-up for any but the proponents of the bill. There was evidenced no real desire to get facts; most of the members of the sub-committee conducting the hearing had closed minds and were not interested in any statement except those coinciding with their own views. One member—the worst offender—was not content with showing his bias at every opportunity, but tried to force labor witnesses into making even more exaggerated statements than they themselves were willing to put into the record. This was particularly true in connection with a "Red" scare which he tried to pin on the management of a certain mill.**

**There was apparently no limit to the extent to which witnesses were permitted to falsify. Assertions made regarding lengths of shifts, for example, were in some cases beyond the limits of physical possibility but went unchallenged by the sub-committee.**

**Two of the members showed a fair attitude, but one was absent from the hearing a good part of the time, and neither was as articulate as the shouters on the other side.**

**Fortunately the bill has no chance of passage, according to the best opinion we have been able to get. But it already has in its record a performance which can only be described as nauseating.—*Editor.***

IT was sort of a textile "old home week" in Washington commencing Jan. 27. Manufacturers and association executives from all branches of the industry were there, attending the hearings on the Ellenbogen Bill before a sub-committee of the House Committee on Labor. Textile labor-union leaders had their innings the first part of the week, while the industry representatives appeared later. Scattered in between were outside witnesses including Governors of certain States—reminiscent of the famous hearings before the Cabinet Committee on Cotton Textiles.

The Ellenbogen Bill for the regulation of the textile industry, introduced Aug. 8, last, by Representative Henry Ellenbogen of Pennsylvania and sponsored by the United Textile Workers of America, is not given a Chinaman's chance of passage, according to the opinions of impartial political observers in Washington.

The textile industry attacked the bill on two main counts: (1) its patent unconstitutionality, and (2) its potential paralyzing effect upon the industry, if it were passed.

### *What the Bill Proposes*

The Ellenbogen Bill, which if passed would be known as the National Textile Act, is summarized below.

It would deny the channels of interstate commerce, the use of the mails, the benefits of Government purchases, contracts, loans and grants, and the privilege of registration of securities, to any person producing textile products under conditions contrary to the standards set forth in the bill. Toward that end, a National Textile Commission would be created to "make such rules and regulations as may be necessary or appropriate to carry out the purposes of this act." Shipment of textile products in interstate commerce would be prohibited if manufactured by any person not licensed for such purpose at the Commission; identification of products of licensed manufacturers would be by a label or a stamp. It would be unlawful to transmit through the mails any textile product not manufactured under a license—*or any letter, order, invoice or communication pertaining to any such product.* (Italics are ours.—Ed.)

By way of penalties, unauthorized use of the labels or stamps would involve a fine not to exceed $100,000, or imprisonment for not more than one year, or both—each violation to be considered a separate offense.

Among the standards proposed by the bill are: 35-hour work week; $15 a week minimum wage; seven days vacation each year with pay; establishment of wage differentials as between occupations; separation wage for dismissed employees; limitations on production at discretion of the Commission; requirement of 5% bonus by employers operating production machinery three shifts; and a group of prohibitions covering unfair trade practices.

### *Bill Held "Without Merit"*

"The Ellenbogen bill proceeds from an incorrect premise and adopts mistaken means which will lead to most unfortunate results to all concerned," stated Arthur Besse, president of the National Association of Wool Manufacturers, the first of the industry's representatives to be heard. "In my opinion the point of view from which the bill has been written precludes the possibility of adequately amending it. . . . The bill is without merit."

Mr. Besse's brief enlarged on what he isolated as the three basic objections to the bill:

"1. It is postulated on a legislative finding of facts which, in so far as the wool textile industry is concerned, are flatly erroneous both in their statement of evils which are alleged to exist, and in the effect on interstate commerce which is alleged to result from those evils.

"2. It proposes to correct those assumed evils by regulations, prohibitions and economic boycotts which if put into effect would beyond doubt impede interstate commerce in textile products and defeat the end sought to be accomplished.

"3. Viewed as a regulation of the detailed operations of the business, it imposes burdens so heavy that they would necessarily result in injury to employers and employees alike, and it places in the hands of a government body broad powers which are unjustified by conditions in the industry for which I speak and which are capable of ruinous abuse."

The Al Smith method was employed in the brief presented by Sydney P. Munroe, assistant to the president of the Cotton-Textile Institute. "Let's look at the record," he said in effect, and examined the facts as to any need for legislation to "rehabilitate and stabilize labor conditions" in the cotton textile industry. Point by point, with great care, he scrutinized the indictment of the industry contained in the bill, explored the records, and established the facts.

"Those who have followed this industry's history in recent years," he said in conclusion, "know that it has established an honorable record for progressive social effort and achievement in the face of adversity."

Among the other witnesses who appeared were Dr. C. T. Murchison, president, *(Continued on page 97)*

*Old Slater Mill, the birthplace of the cotton-textile industry*

# New England

**By James A. Austin**
*New England Editor,* TEXTILE WORLD

FOR years the New England public ignored the textile industry much as a motorist makes light of a tire that is going flat when he thinks he has a spare. Only recently has it been realized that the spare is much too small to fit, and that something should be done to keep the air in the old tire.

To understand the situation, it is necessary to go back a few years. When cotton mills started to drop by the wayside not long after the war, New England non-textile business, social, and civic leaders didn't like it, but they preferred to minimize rather than face the fact. It was common for reviews of the industrial situation to start off with a few remarks to the effect that the cotton industry wasn't really as important to the region as most people thought.

Without going into the various causes of cotton-mill closings, the fact remains that New England, as a section, made no real attempt to find out what these causes were, nor to investigate possible methods for checking, at least partially, the loss of spindles. In place of facts, there were glib and fallacious "explanations" to the effect that cotton mills had to go South because of nearness to raw material, etc. It was much easier to blame "obsolete equipment and inefficient management" than it was to find the facts. There was a touch of sour grapes in the slighting references, and the establishment of a new factory in some other line that employed ten people received more attention than the closing of a textile plant employing hundreds.

This attitude was still prevalent in 1934, when TEXTILE WORLD published the articles "They Have Survived!" and "Cotton Mill Casualties," covering the losses in yarn and fabric mills, respectively. Individuals outside the textile industry stated that this was bad publicity for New England. TEXTILE WORLD replied that it wasn't publicity at all, but an engineer's report on the pounds of air that had already escaped from the tire.

Starting early in 1935, the attitude of the New England public and communities began to change. The liquidation of the American Printing Co., employing 2,000, and of all but one plant of B. B. & R. Knight Corp., brought matters to a head. Realization came that talk of bringing in new industries might be fine, and well worth following through, but that new growth could not be expected to replace the losses that were occurring in textile employment. The spare tire wasn't large enough.

Prodded by textile manufacturers and aroused Chambers of Commerce, the press discovered that the plight of the industry was news, and proceeded to spread "death notices" all over the front pages. From a disinclination even to mention the subject, there was a swift change to a wild wailing and gnashing of teeth in public. Such publicity was bad in that it was overdone, concerned itself with surface rather than basic issues, and overemphasized such matters as the processing tax, but at least there was some action.

## *Public Attention Attracted*

The net result has been that the textile industry can now speak its piece with the assurance of being heard by an audience that has at least some understanding of what it is all about. The question may fairly be asked just what good it does the textile industry to have its problems better understood by the public. The answer lies in what already has been done and what may be done in the future through an enlightened public.

Pawtucket, R. I., serves as one example of what can be accomplished when all elements in a community understand a problem. Last spring the silk and rayon mills in the area were faced with a difficult competitive situation and many closed. One factor was that work assignments were frozen to such an extent that costs would not allow competition with other sections. The Pawtucket Business Men's Association and Chamber of Commerce swung into action. A committee of business leaders and city officials, known as the Blackstone Valley Committee, made an impartial investigation. Cards were placed on the table, and the press cooperated by publishing the facts, not propaganda. As a result, the entire community—as a community—knew what it was all about and what continued shutdowns would mean. When the committee called a meeting of mill men, workers, union officials, merchants, business men, and civic leaders there was mutual understanding, and it was possible to take steps to remedy the purely local conditions that were handicapping the mills.

Fall River offers another example. The problems faced by the city are still serious, but they would be far worse if management, workers, the public, and city officials sat in separate, airtight compartments. Efforts have been made to cut down municipal expenditures and a realtistic attitude has been adopted toward taxes. Naturally, with so many mills already out of existence, the tax problem is not one to be solved in an offhand manner, and there are still wails from the mills, but the right approach has been shown in that unoccupied mill buildings are no longer taxed, and reductions in valuation have been granted to many of the remaining concerns. The Fall River public has been educated to the difficulties

# *Aroused*

## and seeks to remove purely local operating handicaps affecting its industry

that confront the mills and now helps instead of hinders.

The report of the committee appointed by Gov. H. Styles Bridges, of New Hampshire, to study the situation at the Amoskeag Mfg. Co. pointed out that one of the local handicaps to profitable operation in the past had been the lack of mutual understanding between management, workers, and the city of Manchester. The report itself has done much to bring about a better understanding, since it presents the facts of the case clearly and impartially. That definite results have been achieved is evident from the following statement issued jointly by city officials and the citizens' committee:

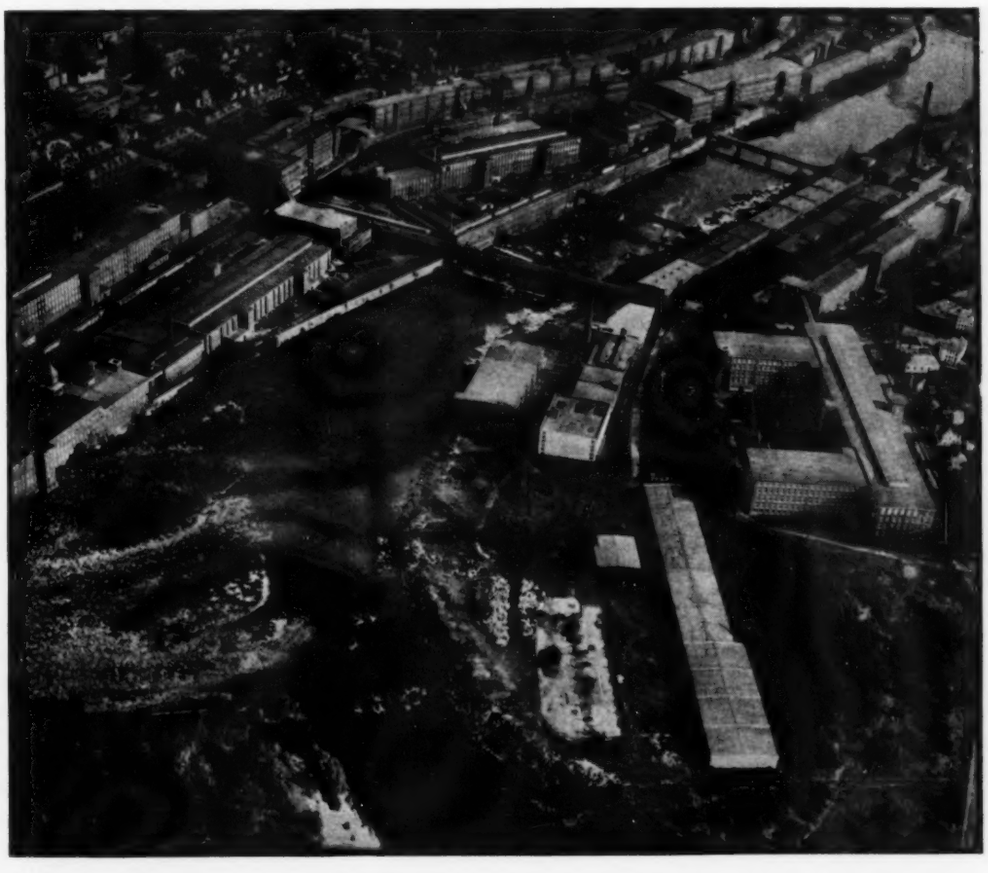
"We are all vitally affected by conditions existing at present in our large industry. After several meetings with the different committees, prominent men, and taxpayers, the Mayor and assessors have considered conditions in neighboring cities and believe that something should be done to help out the situation as it exists. We have, therefore, decided to adjust the taxes so that the Amoskeag Mfg. Co. can meet competitors on even grounds, providing the mills are operating at the time the tax levy is made. In passing, we want to assure Mr. Dumaine that the whole population is ready to help."

There was no chance whatever of having such a statement issued a year ago when city officials and Manchester citizens were not aware of all the problems faced by the mill. Further, in a letter addressed to security holders outlining plans for a financial reorganization under Section 77-B of the Bankruptcy Act, Mr. Dumaine stated:

"The important labor and taxation problems with which the company has been confronted, and which have been important factors in the unsatisfactory results of the last seven years, are being negotiated with the various parties concerned. The negotiations have proceeded to such a point that the company feels these problems will be satisfactorily solved and the necessary cooperation from all sources will be forthcoming."

These examples serve to show that tangible benefits result from enlightened public opinion and understanding. The individual textile town can do nothing about national problems, but it can do much in removing purely local handicaps. Taxation and labor relations are local problems. In New England communities that have made an effort to do something about these local conditions, there has been little talk about actual wage reductions, but emphasis has been placed on the fact that unit costs must be more nearly competitive with those of other sections. Unquestionably many New England mills are not as efficient as they should be, because of stubborn ideas about work assignments on the part of the operatives. Workers cannot be blamed for being stubborn if they have no real understanding of the situation, but where management shows all its cards fairly and squarely, and where the community shows its interest, the workers themselves approach the problems with a different attitude.

There are still a number of New England mills that must "shrink" by sluffing off old equipment, and still units that must close because they cannot be operated efficiently even under favorable local conditions; but, if continued progress is made in getting all the elements in the section to cooperate in making local operating conditions as favorable as possible, New England won't be such a bad place for a cotton mill after all.



*Amoskeag Mfg. Co's plant lines both sides of Merrimac River for more than a mile (International photo)*

# *Is the Stocking a First?*

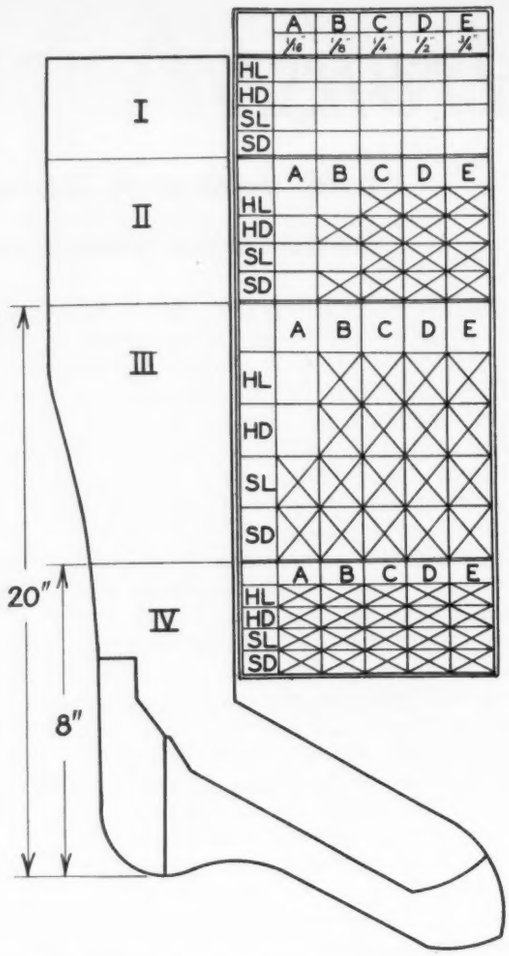
## Association's final standards draft answers this and other queries

"EPOCH-MAKING" was the term used by Dr. W. E. Emley, of the Bureau of Standards, to describe the start, two years ago, of a movement to standardize the grading and labeling of full-fashioned hosiery. Consumer groups were pleased because it meant that, for the first time, a woman would be able to judge the quality of hosiery by other means than price, a commonly misleading indication. Manufacturers of high-quality hosiery were pleased also because it meant a minimizing of unfair price comparisons and consequently a deserved premium to be received for quality. Leaders in both manufacturing and merchandising prophesied that the establishment of construction standards would raise the general level of hosiery quality—to the mutual benefit of manufacturers, merchants, and consumers.

The culmination of two years of study and development was reached late last month when the National Association of Hosiery Manufacturers, New York, publicly released the final draft of its "Proposed Standards of Construction and Inspection for Ladies' Full-Fashioned Hosiery." A definite basis is now available for the grading of hosiery—and that basis is the same whether the grading is done by seller or buyer. No longer need dependence be put upon the personal whim or judgment of the manufacturer or upon the personal equation or eyesight of the inspector. Some mills have already put many of the recommendations of the association's standardization committee into effect.

Copies of the final draft now being made ready for buyers and all other interested parties contain definitions of all terms used in the standards in order that a common understanding of what is meant may be assured. Therefore, the most lay of laymen who could use the new standards to advantage and does not do so can blame only his negligence in failing to procure a copy of the draft.

The draft divides the work of grading into two logical parts. The first has to do with standards of construction—that is, it grades a stocking on the basis of the number of courses it contains, the number of flare narrowings knitted into it, and the width of needle bar used, allowing in each case for the gage of the machine and the number of threads. This part of the draft also specifies the number of threads in the welt, the number of turns per inch required for a body thread to be called high twist, the number of threads necessary in various gages for a stocking to be called sheer, semi-service, and service. In the main this part of the standard shows whether a stocking may be classified as Standard A, Standard B, or Sub-Standard, and urges that all other than Standard-A merchandise be stamped with its classification.




*THIS INGENIOUS CHART shows at a glance whether a silk irregularity or a mender encountered by the inspector permits a stocking to be classified as a first or requires that it be classified as an irregular.*

*The defect is termed A, B, C, D, or E, depending on whether it is 1/16, 1/8, 1/4, 1/2, or 3/4 in. or less in length. The stocking is divided into four zones, of which zone I is the welt, zones III and IV are based on measurements from the bottom of the heel, and zone II is simply the area between zones I and III. In each zone two horizontal rows of squares will be found for stockings which are sheer (indicated by S) and two for stockings which are heavier than sheer (indicated by H). In each case one of the two rows of squares is for dyes which are lighter (L) than Biscayne of the Spring and dyes which are darker (D) than Biscayne of the Spring. (A Biscayne-of-the-Spring stocking is classed as L.) A blank square indicates that the defect permits the stocking to be termed a first; a cross indicates that it is an irregular.*

*Thus, it will be noted that any of the five defects is passable in zone I, while no defect is passable in zone IV. Suppose, for example, we have a 1/8-in. silk defect (B) in zone II of a 4-thread (S) gun-metal (D) stocking—the cross indicates that the stocking is an irregular.*

The second division of the draft is ingenious. It covers the standards of inspection; or, in other words, it shows how defects in the silk and also "menders" affect the classification of the stocking as a first or an irregular (or a second). It takes into consideration that the objectionableness of a defect depends on its location in the stocking, on its size, on the question as to whether the stocking is sheer or heavy, and on the question as to whether the dye is light or dark. All these important contributing factors are boiled down to a simple chart which shows the inspector at a glance how any defect she encounters should affect her classification. Too high a compliment cannot be paid to the ingenuity responsible for this simple chart.

This part of the draft also specifies that all sew-ups must be classified as thirds, but otherwise leaves the question of thirds to the discretion of the individual manufacturer.

# *Rayon's New High*

## Record again set in U. S. and World Output

A NEW all-time high record was set in rayon yarn production in the United States in 1935 when the output aggregated 256,659,000 lb., an increase of 48,163,000 lb. or 23% compared with the 1934 production of 208,496,000 lb. These figures are from the annual survey just released by the *Rayon Organon,* published by the Textile Economics Bureau, Inc. The figure of 256,659,000 lb. for the 1935 production compares with TEXTILE WORLD's estimate of 250,000,000 lb. made in our Annual Rayon Yearbook Number last September.

Production of viscose plus cuprammonium yarn totaled 200,800,000 lb. in 1935, an increase of 18%, whereas acetate yarn output totaled 55,859,000 lb., up 47%.

The *Organon* estimates 1935 world production of rayon at about 950,000,000 lb., a new high record, comparing with 775,000,000 lb. in 1934, or an increase of 22%. This figure of 950,000,000 lb. compares with TEXTILE WORLD's September estimate of 959,580,000.

The proportion of United States output to the world's total was practically unchanged last year. Besides the United States, the survey shows, all key rayon-producing countries made very substantial increases, especially Japan, Great Britain, Germany and Italy. Japanese output is estimated at 215,000,000 lb. against 153,000,000 lb. in 1934, an increase of 40%—and this record was made, it is pointed out, with a sizeable part of the installed capacity sealed to prevent over-production.

United States consumption also established a new record in 1935, with a total of 251,722,000 lb., an increase of 29% compared with consumption of 194,808,000 lb. in 1934. Stocks on hand at the close of the year increased by 2,750,000 lb., but these stocks, based upon week's supply in comparison with shipments, indicated a relative decline from the already reasonable 1934 level.

At the end of 1935 there were 12 producers of yarn by the viscose process (18 plants), four producers of acetate process yarn (4 plants), and two producers of cuprammonium yarn (2 plants). This makes a total of 16 producers and 24 plants, after eliminating duplications.

An analysis of domestic rayon shipments by trades shows that there was some comeback in the consumption by the hosiery industry in 1935, probably as a result of higher silk prices. Shipments of yarn to underwear, outerwear and other knit goods manufacturers (except hosiery) showed a sizeable increase from 1934 to 1935. It is estimated that 75% of this yarn, or approximately 35,000,000 lb., went into the production of circular and flat knit underwear during 1935. Broad goods weavers continued to provide the main outlet for rayon in 1935, the consumption of synthetic fibers in this division totaling 178,900,000 lb. Assuming that rayon fabric "averages" something over four yds. per lb. of rayon, it is estimated that the equivalent of 800,000,000 yd. of rayon woven goods were made, an increase of 40% over 1934.

**TABLE I—Basic Annual U.S. Rayon Yarn Data (Thousands of Pounds)**

| Year | Domestic Production: Viscose Cupra & Nitro Lb. | % | Acetate Lb. | % | Total Lb. | Total Domestic Shipments Lb. | Change in Domestic Stocks Lb. | Imports for Consumption Lb. | Exports Lb. | Import Balance Lb. | Domestic Consumption Lb. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1911 | 364 | 100 | ..... | ..... | 364 | 334 | + 30 | 1,800 | Not reported separately before 1925 | 1,800 | 2,134 |
| 1912 | 1,111 | 100 | ..... | ..... | 1,111 | 1,111 | ..... | 1,750 | | 1,750 | 2,861 |
| 1913 | 1,816 | 100 | ..... | ..... | 1,816 | 1,566 | + 250 | 2,430 | | 2,430 | 3,996 |
| 1914 | 2,422 | 100 | ..... | ..... | 2,422 | 2,442 | — 20 | 2,740 | | 2,740 | 5,182 |
| 1915 | 4,334 | 100 | ..... | ..... | 4,334 | 4,109 | + 225 | 2,450 | | 2,450 | 6,559 |
| 1916 | 5,778 | 100 | ..... | ..... | 5,778 | 5,743 | + 35 | 900 | | 900 | 6,643 |
| 1917 | 6,544 | 100 | ..... | ..... | 6,544 | 6,694 | — 150 | 370 | | 370 | 7,064 |
| 1918 | 5,846 | 100 | ..... | ..... | 5,846 | 4,596 | + 1,250 | 180 | | 180 | 4,776 |
| 1919 | 8,228 | 99.4 | 50 | 0.6 | 8,278 | 8,223 | + 55 | 1,072 | | 1,072 | 9,295 |
| 1920 | 10,109 | 98.8 | 120 | 1.2 | 10,229 | 7,999 | + 2,230 | 1,480 | | 1,480 | 9,479 |
| 1921 | 14,871 | 99.2 | 120 | 0.8 | 14,991 | 16,475 | — 1,484 | 3,276 | | 3,276 | 19,751 |
| 1922 | 23,580 | 99.5 | 120 | 0.5 | 23,700 | 22,545 | + 1,155 | 2,116 | | 2,116 | 24,661 |
| 1923 | 34,374 | 99.7 | 120 | 0.3 | 34,494 | 29,528 | + 4,966 | 3,029 | | 3,029 | 32,557 |
| 1924 | 36,208 | 99.7 | 120 | 0.3 | 36,328 | 40,289 | — 3,961 | 1,954 | | 1,954 | 42,243 |
| 1925 | 49,429 | 96.8 | 1,620 | 3.2 | 51,049 | 52,836 | — 1,935 | 5,441 | 148 | 5,293 | 58,277 |
| 1926 | 60,073 | 95.8 | 2,620 | 4.2 | 62,693 | 51,285 | +11,008 | 9,345 | 400 | 8,945 | 60,630 |
| 1927 | 70,408 | 93.2 | 5,147 | 6.8 | 75,555 | 85,020 | — 9,866 | 15,028 | 401 | 14,627 | 100,048 |
| 1928 | 91,232 | 93.8 | 6,000 | 6.2 | 97,232 | 87,984 | + 9,052 | 12,117 | 196 | 11,921 | 100,101 |
| 1929 | 112,954 | 93.0 | 8,445 | 7.0 | 121,399 | 116,409 | + 4,767 | 15,039 | 223 | 14,816 | 131,448 |
| 1930 | 117,543 | 92.3 | 9,790 | 7.7 | 127,333 | 111,627 | +15,361 | 6,341 | 345 | 5,996 | 117,968 |
| 1931 | 135,249 | 89.6 | 15,630 | 10.4 | 150,879 | 155,556 | — 4,991 | 1,804 | 314 | 1,490 | 157,360 |
| 1932 | 116,379 | 86.4 | 18,291 | 13.6 | 134,670 | 151,844 | —17,827 | 197 | 653 | — 456 | 152,041 |
| 1933 | 172,472 | 80.8 | 41,026 | 19.2 | 213,498 | 211,082 | + 1,306 | 934 | 1,110 | — 176 | 212,016 |
| 1934 | 170,482 | 81.8 | 38,014 | 18.2 | 208,496 | 194,731 | +11,256 | 77 | 2,509 | —2,432 | 194,808 |
| 1935 | 200,800 | 78.2 | 55,859 | 21.8 | 256,659 | 251,700 | + 2,745 | 22 est | 2,215 est | —2,193 | 251,722 |

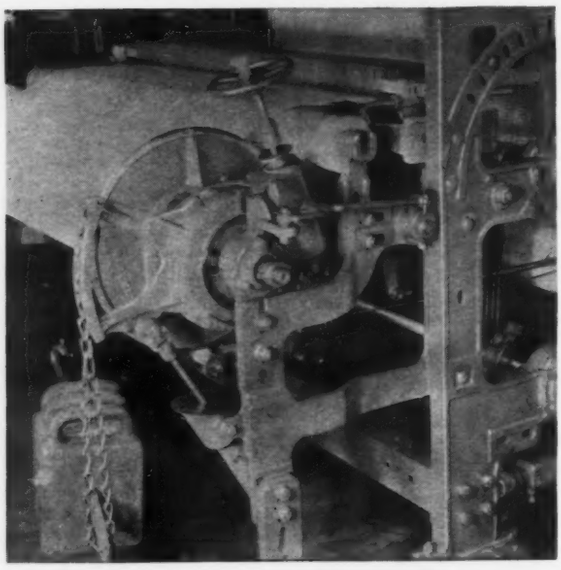
**TABLE II—Distribution of Domestic Rayon Yarn Shipments by Trades**

| Year | Hosiery Lbs. | % | Other Knit Lbs. | % | Broad Woven Lbs. | % | Narrow Woven Lbs. | % | Miscellaneous Lbs. | % | Sub-Total Knit Lbs. | % | Sub-Total Woven Lbs. | % | Total Shipments Lbs. | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1925 | 10.7 | 20 | 10.5 | 20 | 26.1 | 50 | 2.9 | 5 | 2.6 | 5 | 21.2 | 40 | 29.0 | 55 | 52.8 | 100 |
| 1926 | 10.3 | 20 | 15.0 | 29 | 21.2 | 42 | 2.2 | 4 | 2.6 | 5 | 25.3 | 49 | 23.4 | 46 | 51.3 | 100 |
| 1927 | 16.7 | 20 | 28.9 | 34 | 31.5 | 37 | 3.3 | 4 | 4.6 | 5 | 45.6 | 54 | 34.8 | 41 | 85.0 | 100 |
| 1928 | 14.7 | 17 | 32.9 | 37 | 32.5 | 37 | 3.2 | 4 | 4.7 | 5 | 47.6 | 54 | 35.7 | 41 | 88.0 | 100 |
| 1929 | 18.8 | 16 | 43.7 | 37 | 45.4 | 39 | 3.1 | 3 | 5.4 | 5 | 62.5 | 53 | 48.5 | 42 | 116.4 | 100 |
| 1930 | 16.5 | 15 | 38.0 | 34 | 49.5 | 44 | 3.0 | 3 | 4.6 | 4 | 54.5 | 49 | 52.5 | 47 | 111.6 | 100 |
| 1931 | 21.1 | 14 | 48.7 | 31 | 75.6 | 49 | 4.0 | 2 | 6.2 | 4 | 69.8 | 45 | 79.6 | 51 | 155.6 | 100 |
| 1932 | 19.0 | 13 | 38.0 | 25 | 84.6 | 56 | 3.9 | 2 | 6.3 | 4 | 57.0 | 38 | 88.5 | 58 | 151.8 | 100 |
| 1933 | 17.1 | 8 | 40.9 | 20 | 141.5 | 67 | 4.7 | 2 | 6.9 | 3 | 58.0 | 28 | 146.2 | 69 | 211.1 | 100 |
| 1934 | 14.1 | 7 | 41.2 | 22 | 130.6 | 67 | 4.0 | 2 | 4.8 | 2 | 55.3 | 29 | 134.6 | 69 | 194.7 | 100 |
| 1935 | 14.7 | 6 | 47.8 | 19 | 178.9 | 71 | 5.1 | 2 | 5.2 | 2 | 62.6 | 25 | 184.0 | 73 | 251.7 | 100 |

**TABLE III—Distribution of Rayon Yarn Production by Denier (Percent)**

| | 1927 | 1928 | 1929 | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 |
|---|---|---|---|---|---|---|---|---|---|
| Total Fine Deniers (112 denier & finer) | 8.5 | 9.9 | 11.5 | 14.2 | 19.1 | 26.0 | 27.7 | 28.1 | 21.0 |
| Total Medium Deniers (113-162 denier) | 74.3 | 74.0 | 72.9 | 71.7 | 69.1 | 64.8 | 61.6 | 58.9 | 62.4 |
| Total Coarse Deniers (163 denier & coarser) | 17.2 | 16.1 | 15.6 | 14.1 | 11.8 | 9.2 | 10.7 | 13.0 | 16.6 |

*New Crompton & Knowles let-off*



# TROUBLE AT

## *By Ivar Moberg*

THERE is probably no other motion on a loom that has been so much neglected and allowed to drag so far behind modern requirements as the let-off motion. Today, after all the improvements and perfections which have been made on other loom motions, we still find the old friction let-off in most mills. Years ago, when mills were running plain looms with at most six to eight looms to a set, the type of motion used was not nearly so important as it is today on automatic looms with a much greater number of looms to a set.

Take, for instance, an average set, say 30 looms per weaver, in which the looms are equipped with the old-fashioned friction let-off. Note the troublesome and laborious weight adjustments which are needed to secure and maintain, within a reasonable degree of variation, the proper tension in weaving. We shall find, after a few tests, that the friction let-off is really out of date.

Let us watch this loom set on a Monday morning, for instance, when the temperature and humidity are low, and see the laborious work a good weaver has to perform as he adds weights to the let-off to offset the effect of the low temperature and the lack of humidity on the tension of the warp threads. Then take another look later in the day, when temperature and humidity are restored to normal, and watch the removal and readjustment of the weights. Is it any wonder that during the first hours of this period the quality and production of the looms are at a very low mark? The old friction let-off is the worst offender that we run across in a weave room—causing more seconds, either directly or indirectly, than any other motion of the loom.

The ability of a weaver to adjust and maintain the proper tension of the warp threads during the weaving is what makes him good, fair, or poor. It is the part of a weaver's work that requires the greatest skill for, if the tension of the warp is not kept at the proper amount, no weaver can make a success of weaving. Anyone can detect a defect, stop the loom, draw in a thread, find the pick, start the loom, and so forth; but where the real skill comes in is in detecting a deviation from the proper tension and restoring it before serious damage is caused.

Invariably, every time we put a new weaver on a set of looms running on a fabric on which he has had no previous experience, we notice a sharp drop in both quality and production, even though the weaver is a good one. This is due to the fact that an adjustment period is required before he can become accustomed to the new conditions. We do not call this self-adjustment a matter of learning, for the weaver might have had many years of practical experience in weaving. It is no more than is required when a man has been driving an automobile for a great number of years and changes it for another make. There is the same uncertainty and feeling out. Now, in the case of looms, 85 to 90% of this adjustment is a matter of getting the "feel" of proper tension.

Of course, for an expert weaver the adjustment period will not be long; but while it lasts, both he and the mill are on the loser's end. With automatic let-off motion, set to give proper tension, a much less skilled weaver could be put on the same looms with better results.

The weaving imperfections caused by improper tension and faulty let-off are more numerous than those caused by all other troubles combined. The defects listed below will be found due directly or indirectly to improper tension and faulty let-off.

1. Uneven pickage in fabric, due to faulty let-off.
2. Uneven width, due to variation in tension.
3. Excessive warp breakage, due to too great a tension.
4. Break-out in selvages, due to insufficient tension, which prevents the temples from holding the cloth to reed width, or to too much tension, which places an additional strain on the selvage threads.
5. Cut filling, which can be attributed to either too great or insufficient tension. In the first case the filling is cut by excessive contraction of the cloth and in the second case by temples not being able to hold the cloth out to reed width.
6. Skips, caused by insufficient tension—which makes a clear, open shed uncertain—or by too great a tension—which resists excessively the action of the springs in pulling the harnesses down, or up, the full distance.
7. Ridgy cloth, due to insufficient tension, which causes puckering of the cloth at the beat-up.
8. Thick places, caused by faulty let-off.
9. Thin places, caused by faulty let-off.
10. Temple marks, due to excessive tension.
11. Torn selvages, due to insufficient tension, which causes the cloth to snap out of the temples, or to too much tension, which causes the selvages to snap under the strain.
12. "Floating" selvages, caused by such a heavy tension that the selvage threads lie side by side in an even plane, forcing the filling to do all the bending.
13. Dirty warp, resulting from the manipulation of the heavy weights of the friction let-off, especially when the warp beam is full.
14. Changed appearance of the cloth, which is a result of uneven tension on the ground warp when two or more warp beams are used.

Following are some of the mechanical faults which are the result of improper tension:

1. Shuttle flying out of the loom.
2. Warp stop motion stopping loom without thread being broken.
3. Breakdown of harness motion.

# THE LET-OFF

## *No other motion on loom has been so neglected by the mills*

4. Breakdown of take-up motion.
5. Breaking and chipping of shuttle.
6. Excessive breakage of harness straps.
7. Excessive breakage of heddles.
8. Excessive wear and tear on loom parts.

Physically, the friction let-off with its heavy weights gives us more bruised, crushed, and cut fingers than any other loom motion.

With such a bad "criminal record" against the friction let-off, it is obvious that much cannot be said in its defense. The old friction let-off must go, like anything else so far behind modern requirements.

Today we must turn to the automatic let-off motions to get satisfaction. It is true that the automatic let-off motions thus far developed are not what we would call 100% perfect, but they are a vast improvement over the old friction let-off. Their imperfections lie in:

1. Sensitiveness to temperature and humidity variations.
2. Variation in the amount of let-off for each pick.
3. Tardiness in responding to variation in tension.
4. Difficulties in adjusting for proper tension.
5. Absence of resetting facilities at front of loom.
6. Difficulties in resetting without making thick or thin places after the warp has been let back.
7. Torsion resulting from application to only one side.

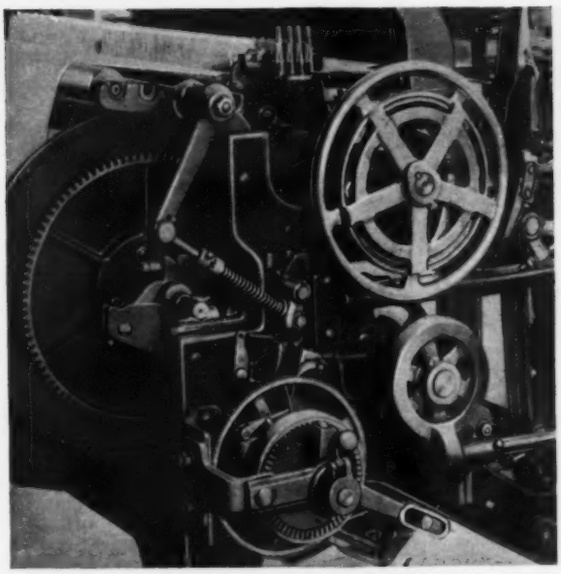
Practically speaking, none of these imperfections is very harmful and might well be ignored until we get something better. They are only given as a hint to further perfections which are along the line a practical mill man would desire. The latest automatic let-off motions really function well on the great majority of fabrics, and the small cost of installation makes the investment attractive to mills running many looms to a weaver.

Whether we have Crompton & Knowles, Draper, or Stafford looms, we can now have an effective let-off. Crompton & Knowles have a new one which lets off evenly and keeps the tension constant throughout the weaving of the warp. The degree of tension is regulated by weight adjustments on a lever; but the weights have only an indirect effect on the tension, and the let-off is automatic. With this motion the beam becomes practically floating in its supports. At the proper moment it is free from all outside contact and readily drawn forward by the beat-up of the reed and the draw of the take-up. The amount of weight is therefore of secondary importance with this let-off motion.

One of the main features is that the motion is, so to speak, self-let-backing. That is, as the weaver after a pick-out, for instance, slackens the warp by turning back the take-up motion, the beam automatically takes up the slackness without any manipulations from the weaver. If the pick-out is not so long that it is beyond the capacity of the dampener piston in the dash pot, all the weaver has to do is to let back the take-up the proper amount and restart the loom.

The let-off motion is operated by a connecting rod from the lay sword. This, through suitable connections, operates a plugger in the let-off housing, relieving the beam from tension so that it will be free to move as the reed beats up the filling. The whole let-off motion is a piece of excellent mechanism and gives high satisfaction.

*Draper-Roper automatic let-off*



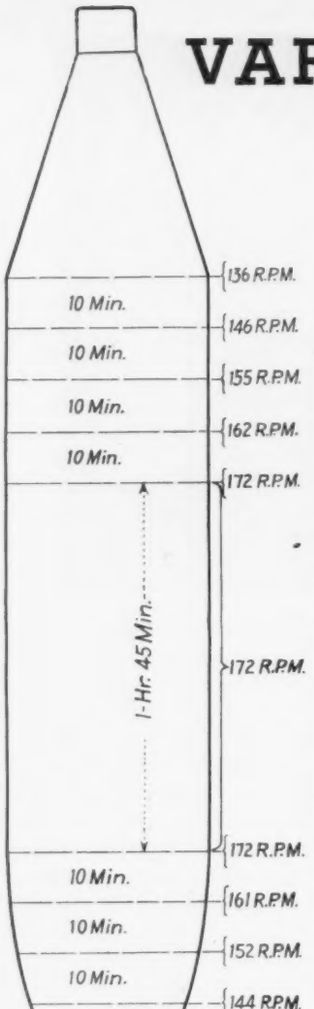
The Draper Corp. has two automatic let-off motions; namely, the Draper-Roper and the Bartlett. In both of these the tension on the warp is regulated by the increasing or decreasing compression of a spring which supports the whip roll in the proper position. As the warp, being tightened by the draw of the take-up, gradually overcomes the resistance from the spring and depresses the whip roll, the movement of the pawl will be increased so that more of the ratchet teeth will be in its path and a larger amount of let-off take place. When the spring overcomes the resistance of the warp and raises the whip roll, the movement of the pawl is reduced and less teeth of the ratchet are in the path of the pawl.

The Draper-Roper let-off motion has a pressing arm which follows the diminishing diameter of the warp on the beam. This pressing arm, through an ingenious arrangement, increases the movement of the pawl as the warp diameter decreases. The increased movement of the pawl synchronizes with the diminishing diameter of the warp, and the whip roll does not have to be farther depressed against increased spring resistance to allow the pawl to take more of the ratchet teeth as the warp becomes smaller. Since the whip roll is not depressed to any greater extent at a small than at a large diameter, an even tension, without any adjustments, is obtained throughout the weaving of the warp. This let-off motion has also a clutch arrangement, conveniently applied, by which the warp beam can be quickly turned in any direction, either to loosen or to let back the warp.

The Bartlett let-off motion, operated by worm and worm gear, is rather slow to move by hand, either to loosen or to let back the warp. It has no means by which the movement of the pawl can be increased at small warp diameter, other than by farther depression of the whip roll against increased spring resistance. Therefore, at small warp diameter a greater tension is put on the warp threads. In order to avoid this it is necessary to reduce the spring resistance from time to time by easing the tension on the spring. The Bartlett let-off motion is more simple in its construction than the Draper-Roper motion and therefore probably somewhat cheaper, but the importance of a good automatic let-off motion is so great that the difference of a few dollars should not be given undue consideration.

# VARIABLE-SPEED SPINNING

## *At Clark Thread found to increase production 17 to 18%*




*Sketch of a bobbin of 30s filling with the variations in front-roll speed indicated at 10-min. intervals over the periods of increase and decrease. The start was at 136 r.p.m., and the maximum speed of 172 r.p.m. was reached in 40 min. This speed was held for 1 hr. and 45 min., after which the frame returned to starting speed in another 40 min.*

AN AVERAGE increase in spindle speed of 18.3% was the result of installing a battery of nine Reeves 300-series variable-speed drives on Whitin spinning frames at Clark Thread Co., Austell, Ga. It is estimated that net production increased from 17 to 18%, and that total savings in dollars and cents were not less than 6 to 7% of total spinning costs, including labor, overhead, and power. Several tests on specific yarn counts showed savings to be much greater than the estimated average. Figuring on an average annual saving of 6.3% of total spinning costs, which amply allows for increased power and other costs incidental to the installation, the return on the investment was estimated to be nearly 50% per year.

The variable-speed drive at Clark Thread Co. is applied to frames built in 1931 and operating on filling wind. It is of the V-belt type in which the belt pulleys consist of cone-faced disks or sheaves which may be spread apart or pulled together to vary the diameter of the circumference on which the belt operates. In the latest model of the spinning frame drive, which is the one installed by Clark, both the driving and driven "pulleys" are variable, an arrangement which provides a sufficient range of speeds for practically all types of yarn. Also, the new drive is more compact and is raised well above the floor to facilitate cleaning.

### *The Variable-Speed Principle*

As every mill man knows, the idea of variable-speed spinning and twisting is not new. On a spinning frame producing warp-wound yarn at constant speed, the continuously changing bobbin diameter, and consequent change in angle between the direction of traveler and point where yarn reaches bobbin, cause irregular tension and uneven yarn. Also, as tension is greatest during the winding of the first few layers of yarn on the bobbin, the speed for the entire spinning operation, being constant, has to be set low enough to allow for this maximum tension—a fact which restricts total production. Use of variable speed is claimed to overcome irregularities by maintaining uniform tension on the yarn as the bobbin builds up—and to increase production.

Filling wind involves the same inconsistencies as warp wind. Where a bobbin without a conical base is used, as at Clark, the first few layers are wound on or near the barrel of the bobbin. Therefore, at constant speed these layers are wound under higher tension than those which follow, and the speed has to be set to allow for them. Furthermore, the fact that on filling wind the balloon grows constantly shorter introduces another complication which we shall discuss later. Consequently, the benefits to production and uniformity offered by variable speed are claimed to be the same as in warp wind. (The idea of varying the speed throughout each traverse of a filling wind has been applied commercially to woolen and worsted spinning, but not to cotton spinning.)

### *Recent Improvements*

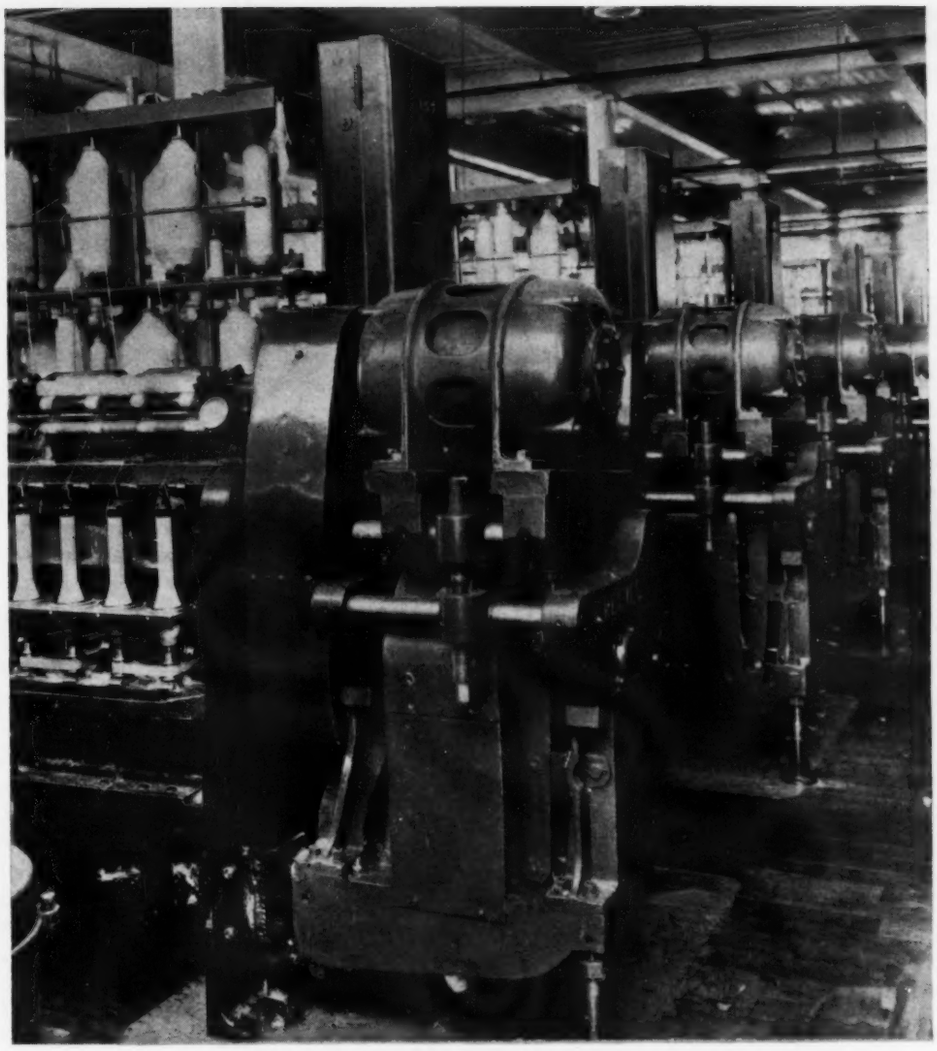
The new Reeves drive modifies the original principle to some extent by slowing the speed down toward the end of the doff, as well as affording slow speed at the beginning, in order to cut down end breakage. The majority of such breaks occur at the beginning and end of the doff. This is particularly true in the case of mills, such as Clark, using big rings and lifts to spin coarse numbers. On filling wind, it is essential to slow the speed when the ring rail is at the top because the distance between the thread guide and the traveler is so short that the thread tends to rub the bobbin. On warp wind it actually is unnecessary to slow speed toward the end of the doff because the ring does not remain at a high position for any appreciable period. However, from the standpoint of efficient operation, in the case of both filling and warp winds, it is considered advisable to return the speed automatically to the starting point at the end of each doff,

### *TABLE I—Comparison of Average Speeds and Ends Down Between Variable-Speed and Constant-Speed Spinning*

| Yarn Count | R.p.m. of Spindle | | Per cent Increase | Spindle Breaks per 10 Hr. | | Spindle Breaks per 10 000 Yd. | |
|---|---|---|---|---|---|---|---|
| | Variable Speed | Constant Speed | | Variable Speed | Constant Speed | Variable Speed | Constant Speed |
| 9 | 4621 | 4100 | 12.5 | ..... | ..... | .... | .... |
| 10 | 4888 | 4100 | 19 | ..... | ..... | .... | .... |
| 11 | 5092 | 4100 | 24 | ..... | ..... | .... | .... |
| 12 | 5348 | 4100 | 30 | ..... | ..... | .... | .... |
| 15 | 5995 | 5100 | 17.5 | .335 | .2206 | .443 | .343 |
| 16 | 6190 | 5100 | 21 | .308<br>.384 | .2741<br>.360 | .410<br>.444 | .439<br>.540 |
| 20 | 6873 | 6100 | 12.5 | .180 | .180 | .240 | .270 |
| 22 | 7170 | 6100 | 17.5 | ..... | ..... | ..... | ..... |
| 23 | 7445 | 6100 | 22 | .388 | .182 | .510 | .292 |
| 24 | 7535 | 6100 | 23.5 | ..... | ..... | ..... | ..... |
| 26 | 7825 | 7200 | 8.7 | .247 | .246 | .326 | .355 |
| 28 | 8170 | 7200 | 13.5 | ..... | ..... | ..... | ..... |
| 30 | 8400 | 7200 | 16.5 | .3158 | .300 | .420 | .465 |
| Average | .... | .... | 18.3 | .3025 | .2518 | .399 | .386 |

rather than depend on the doffer to set the speed properly each time.

The percentage of yarn spun on the bobbin at each of the three speed stages obviously will depend on the count of the yarn and the size and shape of the bobbin. For instance, on a 4-hr. filling-wind doff, speed changes may take place during the first hour and the fourth hour. In the first hour the speed is gradually increasing from starting to maximum and in the last hour is reducing from high to starting. The average speed for the periods of variation is the mean between starting and high speeds. On the basis of the speeds used on 20s yarn as shown in Table II (and discussed later), the yardage spun during increasing speed would be 22% of the total, that spun at high speed would be 56%, and that spun at decreasing speed would be 22%. The exact cycle of speed change depends on the speed curve worked out by each mill for its various yarns. The accompanying diagram of a filling bobbin shows just how the front-roll speed varies in a typical case.



*Battery of variable-speed spinning drives at Clark Thread Company plant in Austell, Georgia.*

An outstanding advantage claimed for the new drive is that it may be adjusted in a few moments to fit a new yarn size or a changed condition caused by, say, a sudden change to dyed roving, the adoption of a new staple length of cotton, abnormal humidity, etc. This change is accomplished by (1) throwing an easily accessible pawl into neutral position, (2) turning an adjusting screw with a hand crank, and (3) setting limit nuts to disengage the low-speed clutch. This arrangement is said to save from 20 to 30 min. on each change.

### *Tests at Clark Thread*

Tables I and II offer a record of tests made on the variable-speed drive at Clark Thread Co. It will be noted that these tests covered a range of counts from 9s to 30s. Dory $1\frac{1}{8}$-in. cotton (a delta variety), $2\frac{3}{4}$-in. rings, 4-in. gage, 9-in. lift, and 3.4 twist multiple were employed.

Table I shows that the average spindle speed on the thirteen counts, produced by the use of the Reeves drive, was 18.3% greater than the constant speed ordinarily used. Furthermore, taking an average of the eight counts on which ends downs were recorded, there was no appreciable increase in spindle breaks per 10,000 yd. for the variable speed, although there were more breaks per ten-hour period, during which time, of course, more yardage passed through the machine. A comparison showed the variable speed to average 0.399 breaks per 10,000 yd. as against the constant speed average of 0.386 for the same yardage. The increased average speed produced by the variable-speed drive resulted in a 40% increase in power consumption, which, plus a slight loss in efficiency due to increased stoppage per unit of time for doffing, oiling, cleaning, etc., resulted, as we have already stated, in an estimated increase in over-all production of 17 to 18% and a dollar saving of 6 to 7% of total spinning costs.

Results of later tests, run on 28s and 20s and spun under

### *TABLE II—Comparisons on 28s and 20s Yarns Between Variable-Speed and Constant-Speed Spinning*

| | Constant Speed | Variable Speed |
|---|---|---|
| 28s Yarn | | |
| Spindle Speed | 7200 | 7200/9000/7200 |
| Traveler Speed/Min | 5140 ft. | 6420 ft. |
| Surface Speed/Min | 400 in. | 500 in. |
| Hr. per Doff | $17\frac{3}{4}$ | $13\frac{3}{4}$ |
| Breaks per Spindle | .272 | .367 |
| Hanks per Spindle/Hr | .76 | .90 |
| Breaks per 10,000 Yd | .425 | .481 |
| 20s Yarn | | |
| Spindle Speed | 6000 | 5700/7300/5700 |
| Surface Speed | 390 | 481 |
| Spindle Breaks | .190 | .190 |
| Hanks per Hour | .76 | .92 |
| Power Consumption per Hk | 5.61 kw. | 6.06 kw. |

approximately the same conditions as the tests just described, were as shown in Table II.

### *Conclusions Reached*

After studying the results of the above tests and others, Clark arrived at the following conclusions with respect to production, return on the investment, flexibility, yarn quality, maintenance, labor costs, etc.:

**Production.** Spindle speed was increased varying amounts from 8.75 to 30% on 9s to 30s, the average being about 18.3%. Actual production increase was from 1 to 2% less than spindle-speed increase due to there being no reduction in the stopped time required for doffing, oiling, cleaning, etc.

Despite this considerable increase gained in production, net savings were only 6.3% of total spinning costs, due to increased power and other costs incidental to the installation.

**Return on Investment.** Operating 80 hr. per week, this 6.3% decrease in costs represents a saving of approximately 50% on the investment yearly. In other words, the drive should pay for itself in two years.

**Flexibility.** From 20 to 30 min. is saved in changing yarn counts, which is an extremely important item in plants, such as Clark, that spin many different counts and find frequent changes necessary.

**Yarn Quality.** No pronounced difference was noted in yarn quality with reference to breaking strength, evenness, etc.

In some cases, however, where the slow speeds were set below the constant speed formerly used, end breakage was reduced at the beginning of the spin and less fly than usual was caused at that period. However, these breaks increased during the high speed to an amount which made the totals for the old and new spinning about equal, and the total cleaning needed seemed in both cases to be equally proportional to the amount of cotton processed.

**Maintenance.** Not enough time has elapsed since installation to warrant an accurate check on maintenance. However, maintenance of the drive itself is not expected to be high since it is sturdily built and is anti-friction bearinged throughout, and furthermore the control parts move slowly. Higher speeds, of course, do mean more wear and tear on the frames.

**Labor.** Increase in production naturally means more piecing-up, doffing, cleaning, oiling, replacement of tapes, changing of travelers, etc., within a given period. As a result, spinners handle from 4 to 10% fewer spindles. Despite this fact, increased production results in an average saving in labor cost of 5 to 10%, conservatively estimated.

**Special Recommendations.** The drive is ideal, Clark believes, for use on coarse counts (below 30s), due to the fact that large packages (9-in. lifts), large rings ($2\frac{3}{4}$ in.), and high speeds (9,000 r.p.m.) can be employed. This is somewhat contrary to the general theory of variable-speed spinning, which assumes that the advantage is greater on fine counts (60s to 100s), due to much less doffing. Fine counts undoubtedly would have the advantage if packages, rings, and speeds were comparable. On counts less than 8s, it is expected that increased lint, cleaning, etc., would considerably reduce savings which are possible on counts from 8s to 30s.

**Disadvantages.** The outstanding disadvantage of the drive is the increased power consumption which goes with increased speeds, 40% in this particular instance. If the drive is run too fast, there is a tendency for filling to build the bobbin smaller in the middle than at the ends, due to uneven tension. In the Clark plant, where $7\frac{1}{2}$-hp. Diehl motors are run regularly on 10-hp. loads, an appreciable increase in the temperature has been noticed. Also, higher speeds mean more friction, and more wear and tear on rings, spindles, tapes, belts, etc. (Present inability of some mills to meet the increased power requirements has to date prevented the adoption of variable-speed spinning in certain instances where, in other respects, the principle of this innovation in spinning drive has met with approval.)

### *Additional Data*

As a final commentary on the efficacy of the drive, it is interesting to note Table III, which has been submitted to TEXTILE WORLD by a mill which has experimented considerably with the new variable-speed spinning on filling wind.

This mill, which requested that its identity remain anonymous, wrote in part as follows:

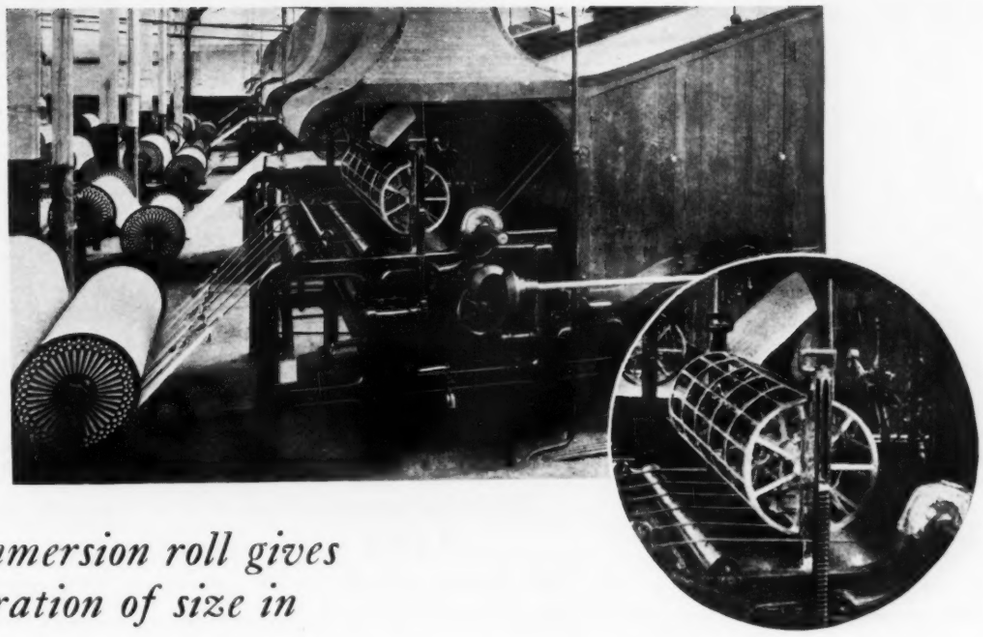
"We have considered stoppage for oiling of all kinds, replacement of tapes, changing of travelers, scouring, piecing, repairs, doffing, and spinners' cleaning. The difference between stoppage frequency required for Reeves drive and stoppage frequency required for regular spinning has been taken into consideration. The small effect of this change on the efficiency of the machinery is due to the fact that frame stoppage is only 26 min. out of a 480-min. day for regular spinning and 27 min. out of a 480-min. day for Reeves drive, the total net difference being only 1 min. a day in stopped time. We are quite sure of our figures as given on the attached sheet in so far as they affect the count mentioned. This may be taken as a good average for the performance of Reeves drives, as we believe the count would fall well in line with the counts run by other mills."

### *TABLE III—Comparison of Productions and Costs Between Variable-Speed and Constant-Speed Spinning*

Data: 200-spindle frame, $2\frac{3}{4}$-in. ring with 19s actual yarn and 15.2 turns per inch.

| | Constant Speed | Variable Speed |
|---|---|---|
| Spindle Speed | 6820 | 6873. |
| Lb./Spindle/8 Hr. @ Efficiency | .303 | .357 |
| Doffs per 8 Hr. @ Efficiency | .619 | .730 |
| Efficiency of Frame | 94.6% | 94.4% |
| Approx. Min. stopped per 8 Hr. | 26. | 27. |
| Cost per Lb.—Labor | .01880 | .01672 |
| Cost per Lb.—Overhead | .02039 | .01728 |
| Cost per Lb.—Power | .00243 | .00339 |
| Total Cost per Lb. | .04162 | .03739 |

*Percentage Comparison:*
Gain on total cost—10.2%
Gain on labor cost—11.1%
Gain on overhead cost—15.3%
Loss on power cost—39.5%
Increase in production—17.8%
Increase in spindle speed—18.1%
Decrease in spindles allocated—3.5%
Per cent, labor cost of total—constant, 45%; variable, 45%
Per cent, overhead cost of total—constant, 49%; variable, 46%
Per cent, power cost of total—constant, 6%; variable, 9%



*Cotton slashers installed in mill of Kanegafuchi Spinning Co., Ltd., Kobe, Japan. Note reel-type immersion roll employed to increase penetration of size.*

*Reel-type immersion roll gives better penetration of size in*

# SLASHING COTTON WARPS

*By Robert Burgess*

IN THE application of warp sizing compounds to cotton yarn, the immersion roll of the slasher plays an important part. Regardless of any special characteristics of the sizing mixture, it is by means of the immersion roll that the size is brought into contact with the yarn—or that the yarn is brought into contact with the sizing mixture. As a general rule, the operator's aim is to have the size thoroughly penetrate the yarn, particularly where weaving only is in view. Therefore, if the yarn is to absorb the sizing mixture, theoretically at least, one of the principal requirements should be freedom of action on the part of the size in its relation to the yarn (or *vice versa*), so far as is mechanically possible.

With the usual form of immersion roll, freedom of action of yarn and size in their relations to each other is inadequate, because the yarn passes through the size under tension and pressure, neither of which lends itself as an aid to proper penetration. Whatever strain is required to draw the yarn from the section beams is transmitted as pressure against the immersion roll. This may not be very severe after the beams start turning; but whatever tension there is on the yarn will interfere, to that extent, with the penetrating action of the size.

## *Conventional Methods*

The only freedom given the size and yarn in the orthodox size box, using the usual type of immersion roll, comes in two short spaces—as the yarn enters the box and before it comes into contact with the roll, and after it leaves the roll and before it leaves the box. Even these two short spaces are regulated by the number of ends or density of the sheet being processed, and by the threads which tend to twist together in the free spaces. The position of the immersion roll in the sizing mixture must be such that the threads will not group together in the form known as taping, but must enter and leave the size just as straight as practicable. This is governed by the position of the immersion roll in the sizing mixture.

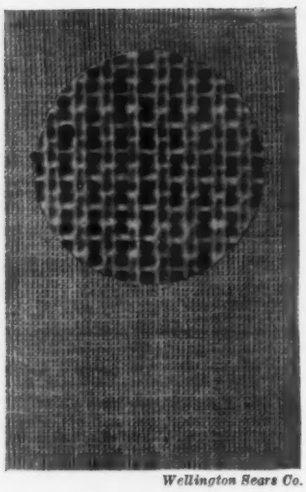
In some instances, the size box is arranged to accommodate a much larger immersion roll, the idea being that the larger roll keeps the yarn in the sizing mixture a greater length of time, thereby permitting it to absorb more of the size. There may be some advantage in this from the standpoint of the time element, but it is certain that use of a larger roll does nothing whatever to relieve either the tension or the pressure on the yarn. Attempts have been made in various ways to ease this tension; but none of the methods tried have come into general use.

## *Used in Japan*

There is, however, an entirely different form of immersion roll which for sometime has been in common use in Japan and which seems to have considerable merit as an aid to penetration in the sizing process. This roll is made in the form of a reel, instead of solid cylinder ordinarily employed.

While it does nothing toward relieving the tension on the yarn, it does remove pressure to a great extent. Incidentally, a variation of the reel-type roll—a solid roll with ribs—affords similar advantages and is obtainable, built-to-order, from established machinery manufacturers. Rib-type immersion rolls are in use in several New England mills, especially those plants handling rayon.

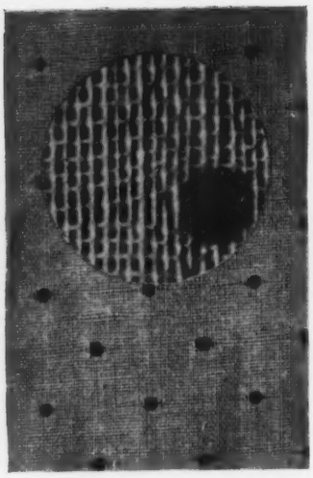
The reel form of construction appears to have quite an advantage over the solid form if freedom of action of both size and yarn is the first requisite of proper penetration. This is because (1) it gives the sizing mixture an opportunity to surround the yarn completely, and (2) it tends to remove the greater part of the pressure on the yarn. The only pressure caused by the reel type roll comes at the narrow strips which form the outer rim of the reel, and since these are of rounding character, the pressure area, is small and ever-changing.



Wellington Sears Co.

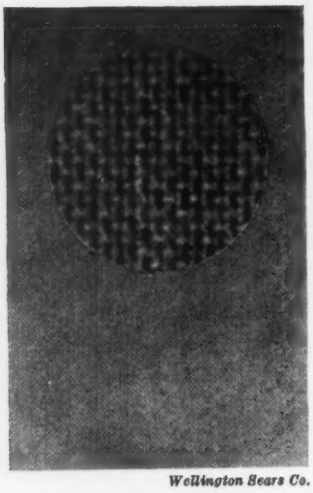
***ORGANDY***

***40", 76x76, 12.00 yd. per lb.***



***CLIPPED-SPOT LAWN***

***36", 74x56, 7.40 yd. per lb.***



Wellington Sears Co.

***AIRPLANE CLOTH***

***36", 80x80, 4.00 yd. per lb. 60/2 mercerized yarns.***

# STAPLE COTTON FABRICS

## *Giving constructions, finishes, and uses of organdy, airplane and balloon cloth, oxford, and pongee*

### *By John Hoye*

IN OUR January number we warned you not to miss the first instalment of this staple-cotton-fabrics series, which began on page 89 of that issue. This, the second instalment, discusses several more of the 100 or more fabrics which the entire series is expected to contain.

Mr. Hoye is a member of the staff of Herbert G. Franz Co., Inc., commission merchants of New York and Chicago, and is also an evening instructor in cotton-goods converting at Straubenmuller Textile High School, New York. He is developing this unique series through the cooperation of many prominent mills, commission houses, converters, and other organizations and individuals.

The fabric magnifications are 5½ times true size, which is about the average magnification of the pick glasses commonly employed by cotton men.

The first instalment covered cheese and tobacco cloths, print cloths, fine plains, and carded and combed lawns.

### *Organdy*

*Organdies* are the lightest and sheerest cloths produced. They are made of lighter yarns than combed lawns but are of a medium construction, usually lower than a lawn construction. The best-made organdies are those that are free from "cloudiness"—that is, they are uniformly very sheer and transparent. Usually they have fewer filling threads than warp threads. Filling yarns are finer than warp yarns. Combed yarns are always used. (The finest organdies are made in Switzerland.)

In the finishing of organdies, the object is to obtain as transparent an effect as possible. Because of the materials used in the production of the permanent (Swiss) finish, an extremely sheer and transparent effect is obtained. The cloth is made more transparent and has a smooth, permanent crispness or stiffness which will not wash out.

| *Widths* | *Constructions* | *Warp Yarns* |
|---|---|---|
| 40" and 45" | 68x56 to 90x88 | 60s to 100s |
| | *Filling Yarns* | |
| | 80s to 150s | |

*Finishes used:* Plain organdy, permanent organdy, printed flock dot effects, blistered crepe effects.

*Uses in finished state:* Summer dresses, collars and cuffs, bedspreads, curtains, waists, blouses, baby bonnets, artificial flowers, millinery, neckwear, dolls' clothes.

| *Examples of Standard Gray Constructions* | | | | | |
|---|---|---|---|---|---|
| 40" | 72x64 | 13.00 | 40" | 88x88 | 11.42 |
| 40" | 76x68 | 13.50 | 40" | 90x88 | 14.70 |
| 40" | 76x76 | 12.00 | 45" | 72x68 | 11.40 |
| 39" | 68x56 | 11.00 | 45" | 80x76 | 10.15 |
| 40" | 84x80 | 11.00 | 45" | 84x80 | 9.75 |
| 40" | 84x80 | 10.75 | | | |

■

### *Clipped-Spot Lawn*

*Clipped-spot lawns* have dot effects formed usually by an additional filling of roving or heavy yarn. The effects can be actual dots or similar small motifs, and these may be white on colored grounds or colored on white grounds. The fabrics are made also without color and bleached, which gives all-white dots on white grounds; or piece dyed, in which case the dots and the ground are solid color. These dot effects are usually formed on a combed lawn as the ground fabric, but other similar fabrics are sometimes used. The plain or colored roving is brought to the face at intervals to form the dot or other motif and then floated along the back until it is brought to the face again to form the repeat of the dot. Afterwards, all of these floating threads along the back are sheared off as closely as possible, leaving the all-over dot effect on the face. Bleach-fast yarns are used for colored effects and colored grounds.

*Examples:*

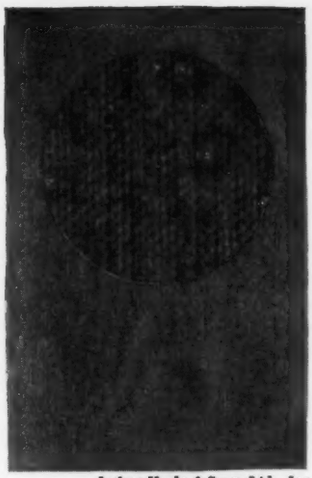
36" 70x54 combed ground
70x61 over-all construction
8-hank roving for dot effect

36" 60x48 carded ground
60x54 over-all construction
12-hank roving for dot effect

To indicate the size, nature, and spacing of the dots, reference is usually made to a sample.

*Finishes Used:* Mercerized and crisp Swiss.

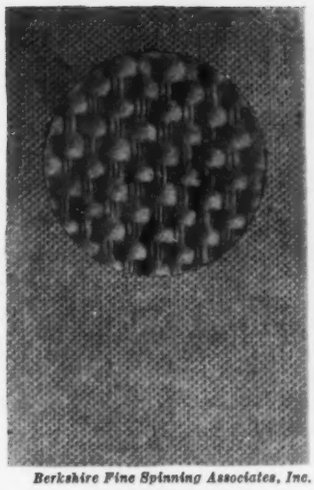
The domestic clipped dotted Swiss fabrics imitate the imported swivel-woven *dotted Swiss*, knots of which are usually hand tied.



Joshua Hoyle & Sons, Ltd., Inc.

**BALLOON CLOTH**

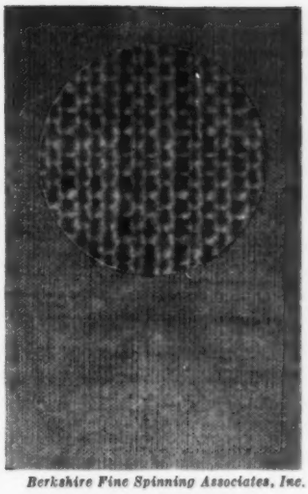
***40", 146x168, 6.18 yd. per lb.***



Berkshire Fine Spinning Associates, Inc.

**OXFORD**

***38", 88x50, 3.65 yd. per lb.***



Berkshire Fine Spinning Associates, Inc.

**PONGEE**

***38", 72x100, 6.25 yd. per lb.***

In some cheaper qualities, usually of carded yarn, the dot effects are formed merely by "bunching" the regular filling, the floats of the bunched picks being later clipped off. In handkerchief lawns spot motifs are formed by either extra warp or extra filling.

■

## *Airplane Cloth*

*Airplane cloths* are strongly constructed fabrics of ply yarn (sometimes mercerized) of long-staple Egyptian or American Egyptian cotton. Their tensile strength runs over 80 lb. in the warp and over 90 lb. in the filling. Although the cloths are made especially for airplane wings, they are used as shirting fabrics and for boys' wash suits. They usually have a square construction.

| *Widths* | *Construction* | *Yarns* |
|---|---|---|
| 36" | 80x80 to 84x84 | Around 60/2 warp and filling |

*When used in gray:* Usually treated with a "dope" (commonly a substance with a cellulose-acetate base) and used for covering wings, fuselage, etc., of airplanes. When such uses are intended, the yarns are mercerized to give added strength.
*Finishes used:* Mercerized, chased, preshrunk.
*Uses in finished state:* Shirtings, boys' suits, nurses' uniforms.
*Examples of standard gray constructions*
36" 80x80 4.00 2-ply warp and filling
36" 80x80 3.70 2-ply warp and filling

■

## *Balloon or Typewriter Cloth*

*Balloon or typewriter cloths* are the highest-constructed plain-woven cotton cloths made. Fine combed yarns are always used. The fabrics are used for typewriter ribbons; and, because of their density and flexibility, they are also used for the gas bags of balloons. These cloths are sometimes converted into shirting and underwear finishes, and are also rubberized for the raincoat trade. In the best qualities long-staple Egyptian cottons or American Egyptian cottons are used. Both domestic and imported fabrics are found in the market.

| *Widths* | *Construction* | *Yarns* |
|---|---|---|
| 38" to 45" | 120x136 to 156x160 | 70s to 100s warp<br>70s to 120s filling |

*Uses in gray:* Gas bags, for which use the fabric is vulcanized.
*Finishes used:* Desized to be absorbent in unbleached state, bleached to be absorbent for typewriter ribbons, mercerized, rubberized.
*Uses in finished state:* Underwear, shorts, shirtings, raincoats.

For typewriter ribbon the cloth is "desized" in order that the dye will be evenly absorbed. Because of its density, this fabric, although light and fine, is not very suitable in the higher constructions for summer wear, because it does not permit of easy circulation of air to dry out perspiration.

*Examples of Standard Gray Constructions*

| | | | | | |
|---|---|---|---|---|---|
| 39" | 132x136 | 5.50 | 42" | 124x144 | 5.00 |
| 40" | 138x146 | 5.19 | 42" | 148x158 | 4.60 |
| 40" | 130x170 | 7.20 | 42" | 158x158 | 5.35 |
| 40" | 146x168 | 6.18 | 44" | 124x126 | 5.75 |

■

## *Oxford*

*Oxfords* are usually combed-warp and combed-filling cloths with a fine warp yarn and a heavy filling yarn. They may also be made with carded warp and combed filling, combed warp and carded filling, or all carded. Fast-color warp yarns are sometimes used; and when the cloth is bleached, the colored warp and white filling form a "chambray" effect or an *oxford chambray.*

In weaving, two warp yarns are laid together and woven as one over and under each filling yarn. Sometimes this is varied by weaving four warp yarns with two filling yarns or some other similar combination. This weave is called a basket weave. Oxfords have about twice as many warp threads per inch as filling. They are made from good-staple cotton and take a higher luster in finishing. Because of the weave and the heavy filling, they have a very flat appearance in the finished state.

| *Widths* | *Constructions* | *Yarns* |
|---|---|---|
| 37" to 38" | 80x40 to 128x60 | 30s to 40s warp<br>16s to 20s filling |

*Uses in gray:* None.
*Finishes used:* Mercerized, chased, preshrunk.
*Uses in finished state:* Shirts, uniforms.

*Examples of Standard Gray Constructions*

| | | | | | |
|---|---|---|---|---|---|
| 37½" | 80x40 | 3.28 | 38" | 88x42 | 3.80 |
| 37" | 80x44 | 3.80 | 38" | 88x50 | 3.65 |
| | | | 38" | 128x60 | 3.15 |

■

## *Pongee*

*Cotton pongees* are usually made from combed yarns. Characteristics of the pongee are that the filling has a greater number of threads per inch than the warp and that the filling yarns are heavier than the warp yarns. Another name for pongee is *Soisette,* which is a trade name. It is usually called cotton pongee, because pongee was originally the name of a silk fabric. In the finishing, the heavier filling yarns flatten out and present a smooth surface for the chasing or schreinering, with the result that a soft, highly lustrous, silky finish is produced. In addition, these cloths are usually mercerized. Pongees are also made with carded yarns of good-staple cotton.

| *Widths* | *Constructions* | *Yarns* |
|---|---|---|
| 34" to 38" | 64x72 to 72x100 | 50s to 70s warp<br>30s to 44s filling |

*Finishes used:* Mercerized, chased, schreinered.
*Uses in finished state:* Underwear, summer dresses, linings, ties.

*Examples of Standard Gray Constructions*

| | | | | | |
|---|---|---|---|---|---|
| 34" | 64x72 | 6.40 | 34" | 68x96 | 7.00 |
| 34" | 64x96 | 7.00 | 36½" | 64x84 | 5.60 |
| 34" | 68x92 | 7.00 | 38" | 68x96 | 6.25 |
| 34" | 68x108 | 7.00 | 38" | 68x108 | 6.50 |
| 34" | 72x100 | 7.00 | 38" | 72x100 | 6.25 |

# CHEMICALS & WOOL

## *Effect of various dyeing treatments on tensile strength of worsted yarn*

### *By Frederick R. Harrison*

ALL too frequently when the tensile strength of finished woolen or worsted products falls somewhat below expectations, it is customary to attribute the condition to dyeing. It seems to have been taken for granted in manufacturing circles that when wool is boiled in a dyebath, it suffers continuous deterioration—the rate of which is in direct proportion to, or in greater proportion than, the length of time of treatment. While wool does lose strength on boiling in plain water, it is not true that the loss in tensile strength continues at a steady rate throughout several hours of boiling in a dyebath when certain wool dyeing chemicals are present.

To determine the actual degree of this deterioration, its rate, and the effect of various chemicals, a series of carefully controlled tests was conducted. These tests were made on fine worsted skeins which had been wound with a given number of ends in each skein. All of the yarn was taken from one lot which had been processed through the mill at one time, so that it was as nearly uniform as it was possible to make it.

### *A Series of Tests*

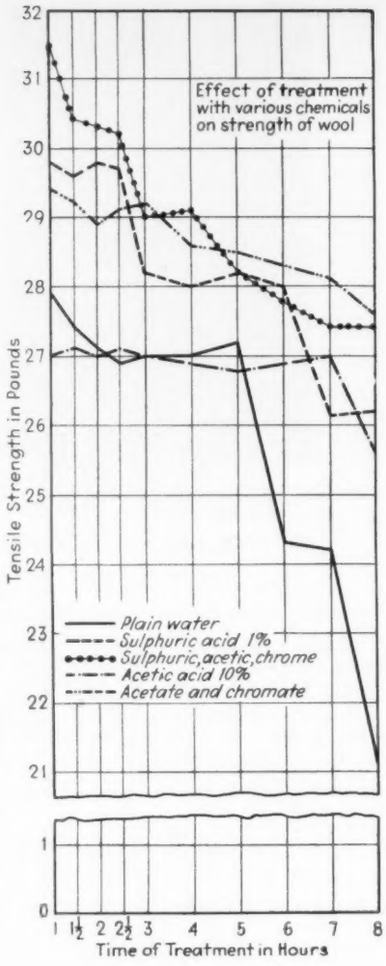
First a series of tests was made in which the same dyeing process was used, but with various dyes. These tests indicated that for the practical purposes of the mill in question, with the types of dyes being used, mostly acid and top-chrome varieties, there was no material variation in tensile strength attributable to the dyes.

Having eliminated the dyes themselves as material factors, the investigation narrowed itself down to the chemicals, water, temperature, and time. A series of five definite sets of experiments was conducted. Each treatment was given to two skeins. For the tensile strength tests, each of these two skeins was broken in five places, making a total of ten strength tests, the average of which was used as a result. The serigraph method of testing was used, taking 40 strands or ends for each test.

The tests were carried out by treating the skeins with dyeing chemicals under dyeing conditions, but without any dyes present. The treatments were as follows: (All chemical percentages refer to weight of the wool, and the ratio of wool to water was maintained at 30 parts of water to 1 part of wool by weight.) (1) Plain water. The water used was industrial water of good grade, cleaned by sand filtration, having a pH of 6.7 and a hardness of 1.5° (English); (2) 1% sulphuric acid; (3) 1% sulphuric acid, 10% acetic acid, and 2% sodium bichromate; (4) 10% acetic acid; and (5) 10% ammonium acetate and 2% sodium chromate.

Ten sets of tests were started together by each of these five methods. One set was boiled for 1 hr., the second set was boiled for 1½ hr., the third for 2 hr., the fourth for 2½ hr., the fifth for 3 hr., and after that by hourly steps to 8 hr. for the longest. As each set completed its boil, the skeins were rinsed carefully until free from excess chemicals, squeezed, and air dried. They were allowed to hang up together until they had all reached the same regain and were then tested for strength. Their moisture content at time of testing was 9.4%.

The tensile strength of the untreated yarn as determined on two tests on each of ten skeins was 36.5 lb. The effect of the various treatments on the tensile strength is shown in the accompanying illustration. Conclusions reached are: (1) When wool is boiled in plain water, it loses more strength than when boiled with the chemicals used in the ordinary dyebath, such as acids and chromium salts. (2) When wool is boiled in plain water, there is a continuing and progressive loss in strength, the greatest loss taking place during the first hour of treatment. (3) When wool is boiled in solutions of acetic acid, sulphuric acid, and chromium salts of the ordinary concentrations used in dyeing, there is a loss in strength during the first hour, but this loss is not increased materially by further boiling. With acetic acid alone, which is very mild, there is a greater degree of progressive loss in strength than with the stronger chemicals.




*Effect of various dyeing chemicals and length of time of treatment on tensile strength of wool.*

### *Acidic Nature of Wool*

Doubtless the underlying cause of greater destructive action on wool by plain water than by acids and acid chromium salts is due to the acidic nature of the wool substance itself. The isoelectric point of wool is approximately pH 4.8, which is fairly well over on the acid side. This accounts in part for the complete disintegration of wool by caustic alkalis and its deterioration by alkaline solutions and alkalis in general. Although water is not an alkali it is, nevertheless, in the alkaline direction from wool. It would appear from the progressive weakening of the wool fiber on continued boiling in plain water that a progressive extractive process is set up, whereby the water dissolves continuously small amounts of wool substance or produces a progressive deterioration by hydrolytic action on the fiber to form water-soluble salts. That is, the water dissociates slightly, and after the extraction of the water solubles, the OH radical neutralizes the acid constituents of the wool making them soluble.

# BRAKES, SHUTTLES, AND REEDS . .

*Some practical suggestions for woolen and worsted loomfixers*

*By Benjamin F. Hayes*

THE brake must stop the loom before the lay is within an inch or so of the cloth. Many loomfixers seem to think that there is only one method of making the brake stop the loom quickly enough; but actually there are several possible methods. We can adjust the brake lever so as to increase the leverage. We can sometimes bring the cam that releases the shipper handle closer, so that the release is more prompt. We can increase the amount of spring by adjusting the collar on the brake rod.

Sometimes it is better to place a new spring on the brake rod. These springs are of the pushing type and will not retain their strength forever. It is often economical to discard springs which have lost an appreciable amount of their energy; but we must not go to extremes in applying spring power to stopping the looms. To do so will break the large foot lever.

Faithful readers of my articles in TEXTILE WORLD will not be surprised if I now jump to another subject—shuttles. It is very important that we have shuttles which are suitable for both the loom and the work involved; and, once the correct shuttles are secured, they should receive as much care and attention as possible from both the loomfixer and the weaver. If the weaver has to be sandpapering the shuttles all the time, it is up to the fixer to fix the loom, for shuttles that have to be sandpapered too much will soon become worthless.

The shuttle must go into the box quietly. If it rattles against the mouth of the box, it will not only damage itself but will also cut the filling. The rattle may be caused by the reed being either loose or too far back. Sometimes it is due to the shuttle being thrown on to the reed to too great an extent. Of course if we throw the shuttle away from the reed, it will fly out; but it is easily possible to throw it on to the reed slightly without damaging either the reed or the shuttle.

As we have already intimated, throwing the shuttle on to the reed too much will damage the reed as well as the shuttle. Therefore, every reed should be marked with the number of the loom from which it is removed. Then, if inspection shows a shuttle mark across the reed, we can go right to the loom responsible and fix it. Dent wires so damaged become sharp and constantly cut the warp threads. This trouble is also indicated by the shuttle, which shows vertical marks on its back wall.

I want it clearly understood, however, that it is best practice among experienced loomfixers to throw the shuttle on to the reed. The point is that this must be done with moderation.

Although the desirability of tagging the reeds with the loom numbers seems obvious, I can recall this practice having been followed in only one of the mills in which I have been employed; and in this particular case the reason for its adoption was that the man in charge of the reeds was not on speaking terms with the overseer of the weaving and so would not inform him about any damaged reed he might encounter.

Since we seem now to have embarked on the subject of reeds, let us give some consideration to the double reed. This, in effect, is an arrangement of one reed in back of another, the dents of the back reed being staggered to split the dents of the front reed. This serves to double the number of dents afforded by a single reed. For example, a double ten reed is equal to a single twenty reed, and each dent offers as much space to the passage of the yarn as each dent in a single ten reed. False reeds are still used to some extent, but I think that double reeds are better and will eventually replace all false reeds.

Two single reeds are just as good as one double reed and, on certain grades of work, are of course much better than one single reed. To illustrate, suppose we are using a No. 24 reed with four threads per dent. By using two 12 reeds, one in back of the other, the cloth will be the same as if a 24 reed were used and there will be a reduction in breakage of warp threads of about 50%.

I believe that the best way to apply two reeds on looms that are built for one reed is to make a groove in back of the reed fastener. The back reed is dropped into this groove far enough to allow the warp threads to get down to the same level as the warp threads in the front reed. Three small reed caps may then be fastened on the back reed, one on each end and one in the center. These caps are fastened to the regular reed cap.

The back reed need not be so rigid as the front reed, as the warp threads will keep it in perfect alignment even if it is a little loose. However, the back reed must be as close as possible to the back of the front reed in order that it may be kept away from the harnesses.

Double reeds are sometimes used on basket weaves to prevent the warp threads from rolling together, and they work very well in such instances.

# HUMIDITY REQUIREMENTS

## *in rayon throwing, warping weaving, knitting, and other operations*

*By J. L. Bitter, Ph.D.*
*North American Rayon Corp.*

VISCOSE rayon and, to a lesser degree, acetate yarn are most sensitive in their reaction to moisture in the air—more so than other textile fibers. This fact must be kept in mind continuously if our mills are to turn out high-quality rayon products.

Rayon yarn consumers are interested in the strength, elongation, elasticity, plasticity, and flexibility of the material they purchase and process. These properties are all affected by the relative humidity of the air. Fig. 1 shows the so-called absorption curves of various types of cellulose and cellulose acetate at different relative humidities. Fig. 2 illustrates the difference in moisture content at the same relative humidities between cellulose which has been dried and then allowed to absorb moisture and cellulose which has been moistened and then allowed to dry.

### *Moisture and Strength*

Fig. 3 shows the effect of the relative humidity of the air and, consequently of the moisture content of the rayon, on the strength of rayon yarns. It will be seen that a breaking strength of 100% for rayon yarn at 40% relative humidity is decreased to 68% by raising the relative humidity to 80%.

A change also takes place in the ease with which yarn can be elongated, and a certain type of rayon which has an elongation at the breaking point of 19.5% at 40% relative humidity will have an elongation of 22% at a relative humidity of 80%. The relationship of elongation of rayon yarn to load applied to the yarn at relative humidities of 60% and of 80% is shown in Fig. 4. It is demonstrated that the higher relative humidity considerably increases the ease with which a certain load or tension will elongate or stretch the yarn. For instance, a tension of 45 grams at 60% relative humidity will elongate the yarn 1%, while at 80% the same tension will elongate the same yarn as much as 2¼%. At the higher tensions, conditions are more serious; a load of 60 grams will result in an elongation of about 1¾% at 60% relative humidity, while the same load will produce an elongation of 4% at 80% relative humidity.

When considering acetate yarn, there is much less effect upon strength and elongation, for the obvious reason that the absorption of moisture does not take place to such a marked degree as in viscose rayon. A characteristic of swelling cellulose is the increase of its dimensions. As the absorbed moisture occupies space, rayon yarn will lengthen and increase its lateral dimension by becoming thicker as the relative humidity increases.

Perfectly dry cellulose, a substance only known in the laboratory, is a hard and brittle material somewhat resembling horn, but as it picks up moisture it gradually becomes soft and pliable.

The moisture content also has a considerable influence on the electrical properties of cellulose matter. Dry cellulose, and especially cellulose acetate, is a good insulator to electricity and will become charged with static electricity when rubbed on other substances. If, however, moisture is absorbed by the cellulose, the result is higher conductivity of the fibers, permitting the discharge of static electricity. There are also observations that the addition of moisture will result in a positive charge which neutralizes the negative charge the cellulose acquires from friction with certain materials.

A compilation of the effects of increased moisture content on the characteristics of rayon yarn is given in Fig. 5. The rayon consumer will do well to keep these fundamental facts in mind when considering the various stages of production from yarn to all types of cloth.

**Throwing**—A relative humidity of 55% is the most suitable condition for throwing. In this process, the yarn is subjected, on the crepe twisters, to considerable mechanical stress. It must not be so hard and brittle that broken filaments occur, and it must not be so moist that increased elongation results in over-stretching. Yarn over-stretched as a result of high moisture content will, upon drying, contract and cause discolorations in the woven cloth. Furthermore, uneven over-stretching is frequently the cause of changed affinity to dyestuffs.

Throwing of rayon yarns is, however, also a process of deformation of the rayon filaments, because from their straight condition they are forced into closely packed spirals. The filaments resist this to some extent, and this is noticed as liveliness of the yarn that is removed from a twister bobbin. Therefore it is necessary to subject the crepe yarn after twisting to high humidity in a steam chamber, so that increased pliability or plasticity may shape the filaments into their position. It is advisable to keep the humidity in steam chambers from getting too high, because condensation may follow. The results will be disastrous if drops of water fall on the yarn because at these moistened places the yarn may easily be over-stretched. A dry stream of 85 to 90% relative humidity and 180° F. is considered safe.

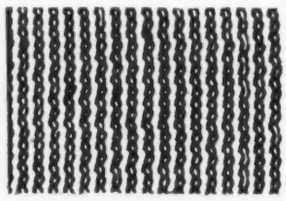


*Fig. 6. Irregular stitch formation in fabric knit at low relative humidity.*

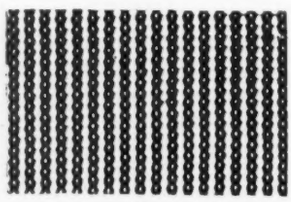


*Fig. 7. No irregularity is apparent in the fabric knit at a higher relative humidity*

**Winding and Copping**—Yarn is subjected to high tensions in winding and copping. Consequently, a relative humidity of 45 to 50% is said to have shown satisfactory results, as the danger of too easily elongating or over-stretching yarn is minimized. Tensions as high as 80 grams have been applied to rayon yarn in copping. Of course this is rather an extreme case, but Fig. 4 shows what dangers exist if the desire to wind a hard-yarn body on a quill or a cop is followed, without giving the necessary attention to climatic conditions. A tension of about 45 grams or lower is considered safe for 150-denier yarn at a relative humidity of 45 to 50%.

**Warping**—Experience has shown that 50 to 55%

Abstract of a paper presented recently at the New Bedford Textile School, New Bedford, Mass.

relative humidity gives good results in warping, because ballooning from static electricity is in most cases eliminated, and the yarn is not moist enough to show appreciable elongation at the comparatively low tensions that prevail in this process.

**Weaving**—In weaving the problem is a little more complex, because several influences have to be considered. The warp yarn is subjected to considerable flexing by the action of the harness, and it has to bind perfectly around the filling when the shed changes after the lay has beaten-in the last pick. This requires soft or flexible yarn and, therefore, a higher range of humidity. On the other hand, the higher humidity increases the risk of stretching the warp yarn, because the harness motion exerts quite a tension on the tight warp when the shed opens. A relative humidity of 60 to 65% has consequently been found suitable for weaving viscose and acetate yarns.

Tension and time combined may lead to adverse results. If a loom remains idle with open shed or unleveled harness overnight, over week-ends, during lunch hours, or even as long as a few minutes, the yarn is gradually stretched over its elastic limit. If, after this stop, the loom is put into operation, filling is woven into a short length of the warp in which the yarn is over-stretched and, therefore, longer than normal. During the later finishing and drying process, this elongated length of warp will contract, with the result that the picks are crowded together. The fabric is denser at this place and shows a so-called "set-mark." The higher the humidity and the longer the time of stretch, the greater is the risk that set-marks will appear during loom stops.

In rayon-yarn slashing mostly gelatin or starch are used. Both are colloids and both show the characteristics of swelling. Should the humidity in the weave shed be too low, the yarn and the sizing lose pliability, and the warp ends do not bind evenly around the picks, giving rise to unevenness in the cloth.

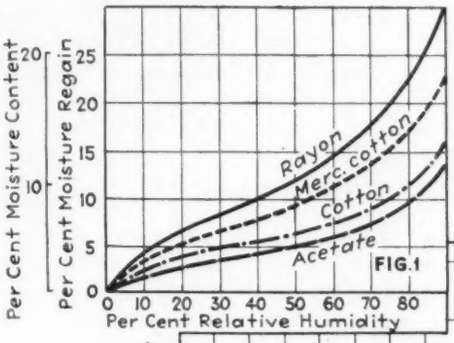
Copping is advisable at a lower relative humidity than weaving; therefore yarn on cops and quills will pick moisture when brought to the weave shed. Increasing moisture content, however, runs parallel with increasing length of the yarn, which will show itself as softening of the yarn body on the cops. The result is sloughing-off of yarn in the shuttle. It is advisable to keep only a small supply of cops or quills at the loom, in order not to expose them too long to the higher relative humidity.

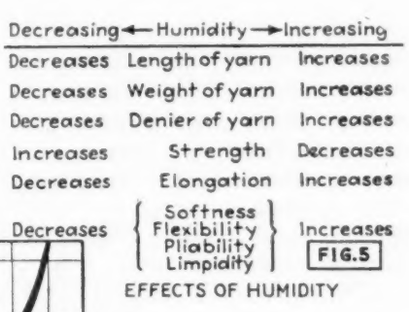
**Knitting**—Tensions are low in knitting and do not have to be seriously considered, but knitting is very decidedly a problem of pliability of the yarn. The motions of needles, sinkers and pressers place the yarn into very small loops. Everything is well as long as the yarn is held in the shape of a loop by the parts of the machinery; but as soon as the stitch is released, and the yarn lacks the pliability to stay in the exact position and shape it was given, it will try to straighten out and will acquire an irregular position in the cloth, resulting in pinholes and a cloth of uneven appearance. Figs. 6 and 7 demonstrate the effects of humidity on the quality of knit cloth. The fabric shown in Fig. 6 was produced at a low relative humidity and very definitely is impaired in its quality by an irregular stitch formation. When the relative humidity was raised, the irregularity cleared up, and the perfect fabric shown in Fig. 5 was produced. Experience has shown that, for knitting, high relative humidity, say 65 to 75%, has been made use of to great advantage.

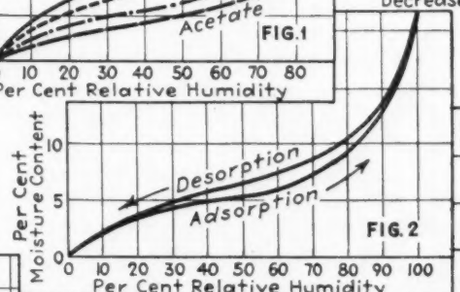
## *A Distress Call*

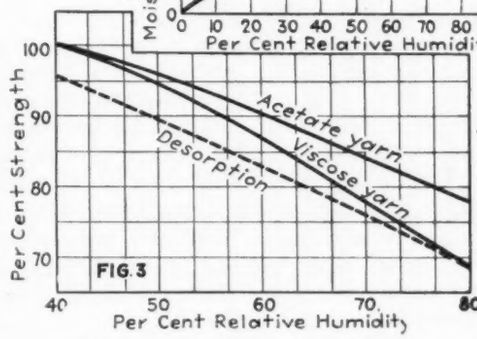
An interesting experience of a knitting mill will illustrate what can happen if climatic conditions are not kept in mind. During the summer and early fall, operations at this mill had been conducted successfully, and the quality of the cloth was most satisfactory. Toward the end of October, a distress call brought one of our service men into action, and the following were found to be the facts:

In the middle of October, cold clear weather had necessitated starting the furnace. As it was a steam-heat system, all radiators were blazing hot and the dry-bulb temperature in the knitting room was 75 to 80° F. For fresh air, all the windows were kept wide open, permitting the cold air (which contains only a small amount of moisture) to enter the room, where its temperature was raised by 30 to 40° F. A relative humidity of only 25% was found, and, after an explanation had been given of what was wrong, there was an expression of surprise, on the part of the mill management, that the condition of the air could have so much to do with the quality of the cloth.





Decreasing ← Humidity → Increasing
Decreases Length of yarn Increases
Decreases Weight of yarn Increases
Decreases Denier of yarn Increases
Increases Strength Decreases
Decreases Elongation Increases
Decreases Softness Flexibility Pliability Limpidity Increases
FIG. 5
EFFECTS OF HUMIDITY



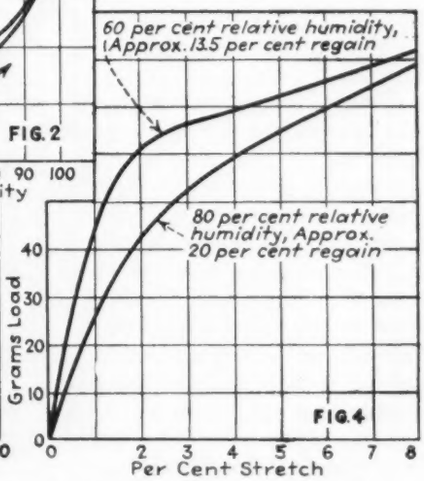


60 per cent relative humidity, Approx. 13.5 per cent regain
80 per cent relative humidity, Approx. 20 per cent regain
Grams Load
FIG. 4
Per Cent Stretch

*Fig. 1. Absorption of moisture by various types of cellulose and cellulose acetate at different relative humidities*

*Fig. 2. Absorption and desorption of moisture by cellulose.*

*Fig. 3. Effect of relative humidity on tensile strength of rayon.*

*Fig. 4. Effect of relative humidity on elongation of rayon.*

*Fig. 5. Effect of moisture content on various properties of rayon.*

# SPLIT FULL-FASHIONED

*By M. C. Miller, M. E.*

*Manville, R. I.*

## *Divided fabric at heel and sole, sidetracked by ringless, is returning*

◆ *The number of carriers which the ringless development shanghaied into regular service gave a temporary setback to the production of split-fabric, full-fashioned hosiery. But the merit of such hosiery, in providing soft, warm, comfortable, long-wearing, and occasionally decorative heel and sole has proved sufficient to require revival of the development. The result is that at least one mill is already producing split-fabric, cradle-sole ringless and practically all machinery builders are now prepared to supply the necessary attachments.*

*Therefore, Mr. Miller's discussion of split-fabric knitting, which begins herewith, is particularly timely. New readers who have not been following his series on full-fashioned hosiery machines and their operation to date will find this a good place to begin it. For dates of preceding articles, however, see page 82 of the January issue.*

*SPLIT FABRIC.* A characteristic of split-knitted fabric is that it is formed of two or more separate and distinct fabrics joined together at the wales in the process of knitting. These fabrics or, more properly, sections of fabric may be of equal thickness but of different color or quality, they may be of different thickness and different colors, or they may be of different thickness and the same color, in either the same or a different quality of yarn. In any case, the yarn of one section does not form part of the other sections, except at the juncture between the sections.

*Spliced Fabric.* A characteristic of spliced fabric is that certain areas are thicker than others, the thick areas being formed of the yarn of the thinner areas and the splicing yarn. Spliced fabric is always composed of thick and thin areas, which may all be of one color and quality, or different in quality, or they may be of different colors, if one yarn is plated or superimposed over the other in the thickened areas. In any case, the yarn of the thinner area always forms part of the thickened or spliced area.

*Comparative Uses.* Both split and spliced fabrics may have any number of fabric sections, depending upon their later use. When used as wear areas for hosiery, there are usually three sections of fabric—a relatively thin central or instep portion and a thicker section on either side to increase the wearing quality.

Fabrics having such reinforced thickened areas are also used for underwear, jackets, etc. The idea might be used to produce design effects, such as clocks or other patterns in hosiery and other garments. In such cases, split designs might be produced by having certain areas thicker than others, or the yarn might be of one thickness but different in color. Such split fabrics have been produced in a limited way in the past, but not commercially in this country.

If clocks or other designs are to be made by splicing, the design portion may be produced of the thicker fabric by having the splicing yarn either of the same color as the body yarn or of a different color. In the latter case, plating would be necessary at the design area, if the resultant fabric were to have a one-color appearance. Otherwise a mottled effect would be produced, although in certain instances this might be desirable.

*Split Versus Splicing.* As the knitting of split fabric always complicates the operation of full-fashioned machinery, it is only resorted to when absolutely necessary and when splicing will not accomplish the same result.

If the quality of the body yarn in spliced fabric is different from that of the splicing yarn, as, for instance, silk and cotton, which dye differently, or if it is a different color from the splicing yarn, plating must be resorted to in the spliced areas. While plating on full-fashioned machines is practical enough to produce fabrics in which the reinforcing yarn can be covered by the body yarn sufficiently to make a practical, even-appearing dyed fabric, it has not been evolved to a point where the body yarn can be consistently relied upon to plate accurately enough over a differently colored splicing yarn to insure that no portion of the underlying yarn will show through. Therefore a mottled appearance is produced in the spliced areas, which is usually objectionable.

If the relatively inaccurately plated fabrics produced while splicing are not acceptable, or if fabric having solid-color sections or sections of a different quality of yarn is desired—that is, fabric in which the body yarn does not appear in all the sections of fabric—it is necessary to resort to split-fabric knitting.

*Sutures.* The junctures between the different sections of split fabric, which are known as sutures, may be of many types. The purpose of all sutures is to connect firmly, and usually closely, the sections of fabric at each course in designated wales.

It is desirable not to have the sutures in full-fashioned hosiery formed so that any one loop is composed of both the instep and reinforced-sole yarns, as this abnormal thickening would require that looser loops be formed at the sutures, large enough to contain both yarns. If these were the size of normal sole loops, cutting would result while they were being forced. This is because the size of the loops in full-fashioned hosiery, particularly at the ankle, where split fabric is usually used, is determined by the size of yarn, if the finest-appearing fabric possible in any particular gage is to be produced.

It has been found, however, that the loops in a narrow suture, not exceeding two needles in width, can be formed of both yarns of immediately adjoining sections of small-looped fabric, without danger of cutting. Cutting will not result over thickened two-wale areas, or over four adjoining loops in any single course, due to the fact that loops of knitted fabric can rob from adjoining loops. But it has been definitely shown that this robbing cannot be expected to extend safely over more than two wales in succeeding courses.

*Stitch Loosening.* In order to produce fine-appearing fabric, it is usually thought desirable to form the loops

as small as the yarn permits, yet long enough to prevent cutting. The loop-length at the ankle, therefore, depends upon the size of the yarn used. For this reason, the loops in the instep or thin portion of the fabric can be considerably smaller than the loops in the sole or heavier portion.

All full-fashioned machines are fitted with stitch or loop-loosening cams for automatically varying the loop size, including special cams for varying the loops at the sole portion. From the foregoing, it will be appreciated that if the fabrics adjoining the suture are formed of loops as small as their respective yarns permit, as is desirable, the loops of sutures wider than two wales, if formed of both yarns, will have to be still looser, or cutting will usually result while knitting. However, as previously noted, as many as four adjoining loops of one course can be formed of both yarns without cutting, if it is not repeated in the next course, as robbing can take place from adjoining wale loops and also from the preceding course. To loosen individual loops of wide-suture wales would prove very difficult on full-fashioned machines and has never been practiced to my knowledge.

If the different areas of split fabric are not produced of varying thicknesses of yarn and therefore are not used as reinforced fabrics, but merely as colored-design effects, with the sutures no wider than two needles, a variation in loop-length in the various sections is not necessary.

*Undesirable Sutures.* Unsightly sutures may also result if any of the suture loops are formed of both the instep and sole yarns, unless a definite relationship is established between the loops formed of both yarns. In other words, plating would be necessary, as in effect the suture is then a spliced suture. While such plating is absolutely essential in two-colored split fabric having spliced sutures, it is also desirable to plate split fabrics of one color, in which the suture loops are formed of both yarns. Plating at the suture, however, is commercially impossible on full-fashioned machines. Therefore, in order to lessen the width of mottled fabric formed of both yarns, such sutures are made as narrow as possible. Also, wide, abnormal thickness of the suture might produce a juncture bulky enough to be objectionable to the wearer.

Another form of undesirable suture, particularly in modern fine-gage fabrics, is the type in which one or more courses of one section of the fabric are not joined at the suture with the courses of the adjoining fabric. This forms an eyelet; and while it will not drop-stitch, it is objectionable, particularly when worn under tension, as in hosiery, because it then appears as a hole. Sutures formed so as to produce actual drop stitches are of course not practical.

*Herringbone Split Sutures.* Various types of vertical sutures—that is, sutures that are made on specific wales, not diverging to other wales—have been produced on full-fashioned machines for many years. The vertical type in almost universal use today is known as the two-needle herringbone split suture. It has all the characteristics desirable for hosiery, where it is used to join the thin center or instep fabric to the thicker reinforced high-spliced heel or sole. It is of course not possible with this vertical type of fixed-wale suture to vary the width of the reinforcement. Only straight high splices and one-width soles can be produced with it.

A vertical two-needle herringbone split suture is shown in Fig. 84. This drawing shows a section of fabric, back side up, with the last course at the top of the drawing. The right-hand sole portion of fabric is shown at *a* and the instep portion at *b*. The suture is formed on the wales *c* and *d*. It will be noticed that the two loops of the suture wales *c* and *d* are formed in alternate courses of the sole yarn *a* and the instep yarn *b*.

None of the suture loops *c* and *d* are formed of both sole and instep yarns, so no abnormal thickness results at the suture. If the sole loops, including the *c* and *d* loops, are formed of loops loose enough to provide for the reinforced, heavy sole yarn *a*, cutting will not result at the suture. While such loosening will provide more space than necessary for the thin yarn *b* at the alternate-course suture loops *c'* and *d'*, this is not noticeable.

It will be noted in the drawing that, while there is a short float formed at the suture at *e*, this float is not long enough to be detrimental.

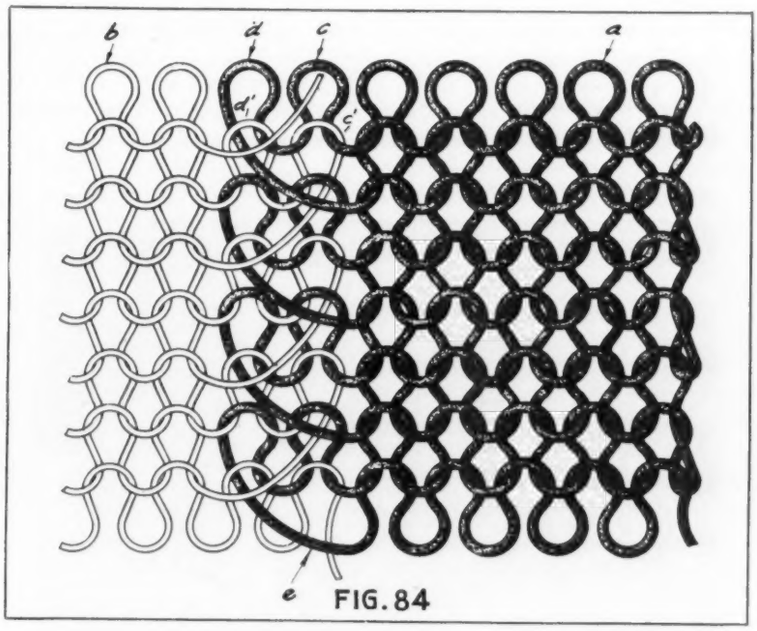


FIG. 84

*Fig. 84. Herringbone vertical split-suture fabric.*

# WORSTED GRANDRELLES

*By*
*Frederick B.*
*Hudson*

*Yarns plied from contrasting colors call for uniform blends and counts in singles*

WORSTED spinners who find that twist or grandrelle yarns made from contrasting colors tend to be full of twits and uneven places should give special attention to the gilling of the colors.

Colored slivers for twist effects should be blended skillfully so that all the colors and lengths of fibers are mixed evenly and equally throughout the lot. Regularity of shade depends upon the skill of arranging the ends of specific colors in the gill box. Small amounts of toning colors, which are so difficult to distribute throughout the blend, tend to make the finished fabrics look patchy if they are not well distributed.

Toning colors should be made into temporary mixtures and run in with the blend. When 3 or 5% of red, purple, or orange is to be mixed with a brown shade, the small portion of toning color should be mixed with at least 10% of the brown at a prior gilling operation. Temporary mixtures made in this way will distribute the toning color evenly through the whole of the blend. The operation of mixing the temporary mixture should not be counted in the number of gillings. The first gilling is taken as being the gilling when the temporary mixture is mixed with the rest of the blend.

Well-mixed fibers are essential before the twist is inserted at the spindle gill box. When the slubbings leaving the spindle gill box have streaky patches of color, it is an indication of insufficient gilling. In many cases one extra gilling will make all the difference between a level yarn and a streaky one.

Gilling mixes the colors but does not improve the wool fibers, which tend to snap and gather in slubs. In certain cases grandrelle yarns which are level in shade and perfect in coloring are uneven and slubby owing to defective gilling. When three or four gilling operations are essential, it is advisable to reduce the back draft of the gill box to $1\frac{1}{8}$, or in some cases to eliminate the back draft entirely. When the latter is done, the back-roller surface speed is the same as the faller speed, and a very gentle action is given the fibers.

Faller riding should be avoided. When colored wools are being gilled repeatedly, the fibers should be well controlled. After several gillings the material becomes loose and the fibers tend to ride and race over the tips of the faller pins. Thinner slivers therefore should be used as the material is passed down the set of mixing boxes. It is advisable to have more draft than doublings. If five ends-up are used, a draft of $5\frac{1}{2}$ would be needed.

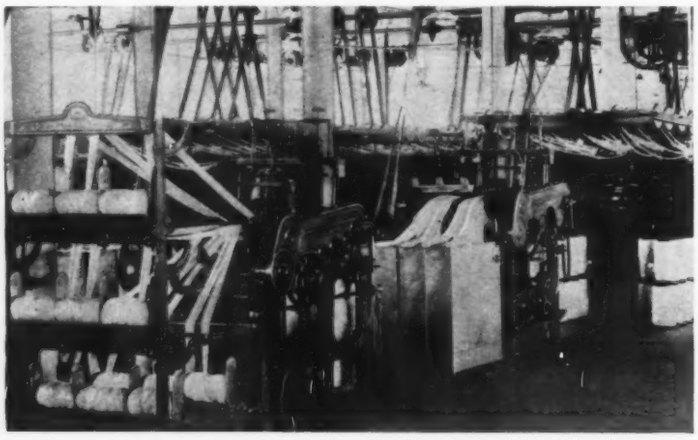
Clean faller pins are necessary. During the mixing, waste gathers at the base of the faller pins, acting as a cushion and preventing the wool from receiving the full benefit of the faller treatment. Fibers gilled in the tapered part of the pins are not so efficiently gilled as those which receive the treatment in the straight part of the pins near the base. When colored mixtures are being made, it is advisable to have the fallers "knifed" each day.

Accurate counts are essential in making grandrelle yarns. If one of the colored ends being folded together is thicker in count than the other, an uneven distribution of color will be made. Irregularities in counts make yarns which are off-shade.

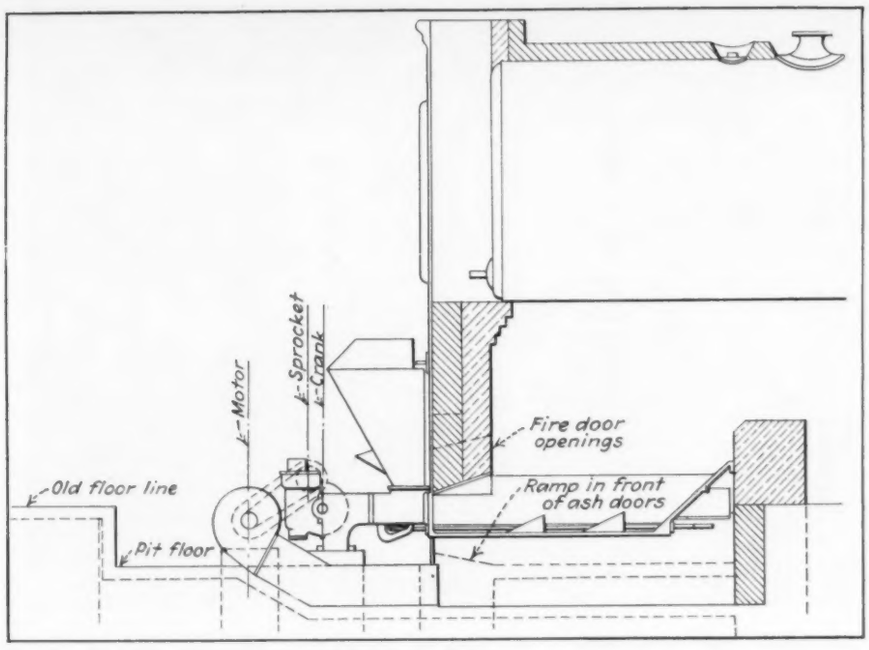
Unnecessary waste also is made when irregular counts are produced, because the thicker yarn will run out before its time and leave a quantity of the yarn of the lighter count on hand. Great care should be taken to get regular counts when yarns are needed with excessive twist. In cases where 2/36s are needed with 20 turns, it may be necessary to spin the single counts to 1/39s to allow for the take-up of the extra twist.

In twisting light and dark shades together, the dark shade should be placed on the back pegs of the machine. This forms a contrast and enables easy replacements and prevents the colors being combined wrongly.

Those grandrelles which consist of a self-colored or a mixture yarn twisted with white need skillful handling. Such colors as bright reds, blues, and greens stand out prominently and tend to subdue the white. When yarns of this nature are needed, it is advisable to have the white yarn a little heavier than the colored one. Samples should be made with (1) a white yarn of the same count, (2) white 3% heavier, and (3) white 5% heavier. The desired combination then could be found by comparing the three samples.



*Twist effects require careful gilling of the colored singles.*




*Longitudinal section of 72-in. boiler showing location of stoker, motor, and control device.*

*Silk finishing plant meets increased*

*By Francis A. Westbrook*

# DEMAND FOR STEAM

## *by installation of automatic stokers*

AS HAS happened at various times to many other finishing plants, about three years ago Independent Silk Dyeing Co., Inc., Farmingdale, N. Y., was faced with the necessity of meeting an increased demand for steam. This condition was remedied, without purchasing new boilers of higher ratings, by the installation of underfeed stokers under two of the three boilers already in service. Later, a still further increase in steam requirements, resulted in the installation of a similar stoker under the third boiler.

The three boilers are all of the horizontal-return-tube type—two being 72 in. x 18 ft. and one 84 in. x 20 ft. The 72-in. boilers are rated at 150 hp. each, and the 84-in. boiler is rated at 250 hp., or a total of 550 hp. In December, 1932, McHose underfeed stokers were installed under the two 72-in. boilers. These boilers originally were set about 5 ft. above the floor level. In order to install the stokers, it was necessary to excavate an additional 1½ ft., making the setting height 6½ ft., the distance from the top of the retort to the bottom of the shell being 4 ft. 8 in. While this distance could be greater for higher ratings, it was all that was possible in this instance.

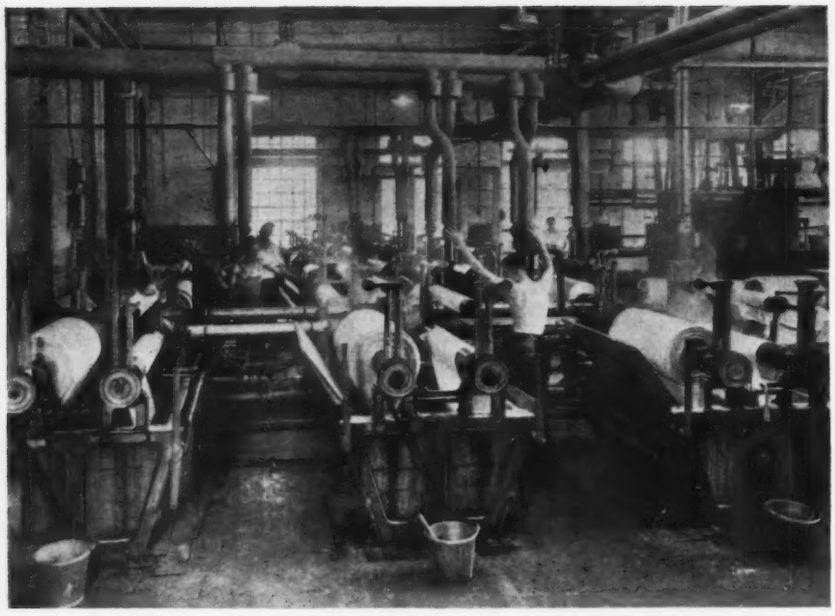
The stokers are 6 ft. wide and 6 ft. 1 in. long, and are driven by 7½-hp., slip-ring motors with 50% speed reduction. The motors are controlled by Ruggles-Klingemann step-compensating controllers operating a General Electric speed regulator. The controllers are plunger-type devices which mechanically move the rheostat handles back and forth according to the load, shutting off altogether when the maximum steam pressure of 100 lb. is reached.

With this equipment, the boilers were operated at about 150% rating and gave very satisfactory results. Therefore, when, in July, 1934, the matter again came up of meeting still further increased steam requirements, it was felt that stokers should be used. Nevertheless, there was some discussion as to the advisability of installing a larger boiler in place of one of the 72-in. boilers already equipped with a stoker. It was thought that perhaps it might be a good plan to purchase a second boiler of about 300 hp. and place a stoker under it. However, on account of the cost of a new boiler, it was decided finally to keep the two 72-in. boilers as they were, and to install a stoker under the 84-in. boiler. In this way, the rating of the third boiler could be increased about 50%, which would take care of the increased requirements. This plan was carried out.

The new stoker under the 84-in. boiler is 6½ ft. wide and 7 ft. 1 in. long, and has been provided with a 7½-hp., slip-ring General Electric motor. A Ruggles-Klingemann plunger-operated unit was installed for controlling the dampers of all three boilers as a unit. The unit also operates the rheostats or speed controllers of the three stokers. This plan is feasible, since all the boilers are generally operated at the same time. However, any stoker or damper movement can be cut off the line when necessary. With the plant running at capacity, three stoker-fired boilers carry the load without trouble.

The original setting height of the 84-in. boiler was about 5 ft. This was increased to 7 ft. by excavating 2 ft. The old front of the boiler was cut off at the proper place in order to permit replacement with the stoker front, which is 6 ft. 10 in. high.

An interesting result of the application of the damper control is that periods of smoke are much fewer and the smoke is not as dense as before. While the stokers do not smoke when in operation, there is smoke when the fires are being cleaned, and it has been found that the dampers help to stop this.



# VAT-DYE PENETRATION

## *on cotton fabrics improved by unorthodox method of application*

***By G. Mahon***

*(All rights reserved by the author)*

PLAIN-WEAVE cotton fabrics made from highly twisted yarns have particularly good wearing qualities and are favored for a variety of uses. Dyed with fast colors and given an imitation linen finish, they are suitable, for example, for making women's wash dresses, children's play suits, and men's shirts. Unfortunately, in dyeing these fabrics with vat colors, most dyers have found it difficult to avoid streaky and uneven dyeings and to obtain good penetration of the dyes. For several months the writer has been following a rather unorthodox procedure in handling fabrics of this type, but with much better results than he obtained by the usual methods.

Ordinarily one of the two routines shown below is followed in processing cotton piece goods, which are jig-dyed with vat colors.

| *Routine A* | *Routine B* |
|---|---|
| 1. Singe | 1. Singe |
| 2. Mercerize | 2. Bleach |
| 3. Bleach | 3. Mercerize |
| 4. Dye | 4. Dye |

In either case, mercerizing precedes dyeing, and the faults mentioned above are likely to occur. The streaks appear to be due largely to tight and slack places in the yarn; the poor penetration, to the highly twisted yarn. At any rate, the trouble is not due to improper manipulation of the goods in the dyeing operation itself.

### *The New Routine*

It was decided to see if the difficulty could be overcome by dyeing before mercerizing, and it was found that on light and medium shades suprisingly better results are obtained. Therefore, the procedure followed now is to singe; bleach; dry; dye nearly to shade; mercerize and return to jigs for reduction with hydrosulphite and caustic (with the addition of a small amount of dye to bring to shade if necessary), oxidation, and soaping. This procedure is, of course, somewhat more costly than the usual method, but the results more than justify the extra expense. In fact, if the higher percentage of first-quality goods obtained is taken into consideration, the new method probably is less expensive in the end. Quite frequently, it is not necessary to reduce after mercerizing.

It is important that after bleaching the goods be dried before they are dyed. For some reason, this gives more level dyeings than are obtained if the goods are run wet onto the jig. The writer offers no explanation of why this is so, and it would appear that drying would have little or no effect on the results, since the goods are wet out when run on to the jigs. Nevertheless, the results are decidedly superior when the goods are dried after bleaching.

### *Dyeing Operation*

The dyeing operation itself differs only in detail from the ordinary methods. Naturally, the usual precautions must be taken that the dyes are thoroughly in solution, that the requisite amounts of caustic soda and hydrosulphite for the particular dyes used are present, and that dyeing is carried out at the proper temperature. It is important to note that, upon mercerizing, the shade originally obtained will go much darker, and, in many cases, will change appreciably in tone. This must be allowed for, and the dyer should try to avoid the necessity for additions of dye in the reducing bath which follows mercerizing. For example, an olive drab shade produced Indanthrene Olive R (C.I.1150), Indanthrene Brown G (C.I.1152), and Ponsol Jade Green (C.I.1101) turns perceptibly yellower after mercerizing; the shade produced with Indanthrene Blue BCD (C.I.1113) and Ponsol Jade Green turns much redder; etc. After a comprehensive range of shades has been dyed by this method, the dyer will have learned how

to allow for the change in shade. At first, however, he will usually find it necessary to add color during the reduction process.

### *Chief Difficulty*

The chief difficulty encountered by any one at the start is that of getting the shades too heavy. It is better to go a little light, and add color, than to get the shade too dark and then have to strip it down. The dyer will find it most advantageous to keep two swatches—one of the goods as they are sent for mercerizing, and one as they are sent on for finishing.

A few typical procedures for dyeing by this method are given below:

1. Rose shade, 160 lb. of cloth—Dye six ends with 15 oz. Indanthrene Scarlet G (C.I.1098) and 12½ oz. Indanthrene Red RK (C.I.1162), oxidize; rinse; mercerize; and soap.
2. Violet shade, 160 lb. of colth—Dye eight ends with 5 lb. Indanthrene Brilliant Violet RR (C.I.1104) with the addition of a retarding agent, such as pyridine; oxidize; rinse; mercerize; and soap.
3. Canary shade, 240 lb. cloth—Dye six ends with 1¼ lb. Indanthrene Yellow GK (C.I.1132), 1⅛ lb. Hydron Yellow NF (C.I.1159), and 5 oz. Indanthrene Yellow 3 RN; oxidize; rinse; mercerize; and soap.
4. Buff shade, 170 lb. of cloth—Dye four ends with 12 oz. Indanthrene Olive R (C.I.1150), 1 lb. Indanthrene Brown G (C.I.1152), and 5 oz. Indanthrene Yellow 5GK; oxidize; rinse; mercerize; reduce with addition of 3 oz. Indanthrene Brown R (C.I.1151); oxidize; rinse; and soap.
5. Orange shade, 160 lb. at cloth. Dye six ends with 6 lb. Indanthrene Golden Orange R (C.I.1097); oxidize; rinse; mercerize; reduce with addition of 8 oz. Indanthrene Golden Orange R; oxidize; rinse; and soap.

When a lot is just barely off shade after mercerizing, it is sometimes permissible to top it with one of the fastest of the direct dyes. This is not recommended as a general practice; but in those cases where it is allowable, obviates a second vat-dyeing operation.

Heavy shades—such as navies, dark browns, etc.—are often obtained by the padder-jig method. Without doubt, this is the most difficult process; but it probably is the most satisfactory method of obtaining good penetration with certain dyes. In this process, the goods are padded with unreduced color which is held in suspension by a suitable thickening agent or dispersing agent. They are then transferred to the jigs, where they are reduced, oxidized, and soaped. In the padder-jig process, care must be taken that, after padding, the goods do not come in contact with fingers, batch rollers, etc., such contact being likely to cause marks or stains which will be apparent upon reducing and oxidizing. There are various modifications of the procedure outlined above. Some dryers, for instance, believe that better penetration and a deeper shade are obtained if the goods are dried before they are transferred to the jigs. Others pad once, dry, and transfer to the jigs.

### *Padder-Jig Method*

Typical procedures for dyeing by the padder-jig method are as follows:

1. Green shade, 125 lb. of cloth—Make up 16 lb. Ponsol Jade Green (C.I.1101), 1½ lb. Indanthrene Brilliant Green BB, 1½ lb. Indanthrene Yellow 3 RN, and 5 lb. of sulphonated oil to 25 gal. with a suitable dispersing or thickening agent; pad; dry; re-pad; transfer to jig; run four ends at 122° F. in bath made up to 40 gal. and containing 1½ gal. caustic soda 52° Tw., 6 lb. hydrosulphite, 10 oz. soda ash, and 1 lb. Ponsol Jade Green and 8 oz. Indanthrene Brown G (C.I.1152) previously dissolved with hydrosulphite and caustic; add 10 oz. Indanthrene Brown G; run 2 ends; oxidize; rinse; and soap.
2. Rose shade, 100 lb. of cloth—Make up 10 lb. Indanthrene Red RK (C.I.1162), 3 lb. Scarlet G (C.I.1098) to 20 gal..; pad; dry; re-pad; transfer to jig; reduce without addition of color; oxidize; rinse; and soap.

Finishing of these fabrics presents no particular difficulties. They are usually sized with a mixture of starch, dextrin, and softener; tentered; calendered; hooked-off; and folded. Another method which gives an excellent finish is to dampen, beetle, size, and dry and frame on an 80-ft. tenter.

# SILK TRAVELERS' JUBILEE

## *Body formed in 1916 reminisces on 20th anniversary*

THIS month marks the 20th anniversary of the founding of the Silk Travelers Association. This association was formally organized in February, 1916, and on March 2, following, the first annual dinner was held at the Aldine Club, New York, attended by nearly 600 salesmen and sales managers. Pioneers in formation of the body were: H. W. Smith, John J. Twohey and C. R. Clifford, supported by a hard-working and inspired committee. Mr. Smith holds the association record for long service; elected secretary in 1916, he has continued in that post ever since. Mr. Twohey was the first president.

Through the 20 years the association has held faithfully to its original aims, which were to aid silk sales executives in development both of their business interests and their personal welfare. Death benefit is an important part of its work; since the start this fund has paid out about $30,000 to kinsfolk of 137 members who died during the 20 years. The annual dinners of the association, of course, have become traditional. The 20th jubilee dinner, an event of outstanding interest to the Trade, is being held this month in New York. However, the body has more than social and welfare significance. A few other highlights of its history are: Enactment of laws giving traveling men the right to vote wherever they might be; aid in organizing and conducting the two successful Silk and Fashion Expositions, New York, 1921 and 1923; later revision of by-laws to include rayon fabric salesmen.

*Edward Cossenas, president for the 1936 term*

Officers for 1936 are Edward Cossenas, president; L. C. Cremins, of Zollinger & Schroth, Inc., first vice-president; M. J. Carrigan, of L. and E. Stirn, Inc., second vice-president; H. W. Smith, of Clifford & Lawton, Inc., secretary; and W. C. Leopoldt, of Payet-Volta Miller, Inc., treasurer.

# MILL PAINTING

## *New techniques in plant conditioning effect major economies*

***By A. H. Kennedy***
*Sherwin-Williams Co., Philadelphia*

LEADING textile mills have recognized for some time that the use of white finishing coats of paint on ceilings and upper walls has resulted in substantial increases in the amount and quality of light available for performing difficult operations. Actual Sight-meter readings have shown these increases to be 50 to 100% or better in foot-candles of light. Such improvements have had a measurable effect on the productive capacities of employees. But mildew, discoloring deposits, and other factors have made the maintaining of these white surfaces a not always easy matter and one which we shall presently discuss.

The strictly maintenance angle of mill painting remains a confusing and unsolved matter—notably in dyeing plants, where every attempt to get structural steel to stand up has failed in the long run. Under less severe conditions, paint has proved itself in preserving wood and in protecting metal surfaces against corrosion. Without going into your mill and checking every condition, it is impossible to offer a set recommendation; but I hope to leave with you a few helpful pointers on practical painting problems. First, however, let me emphasize that the services of a good paint engineer cooperating with your staff should be considered a part of the ingredients in the paint you buy. His specifications determine in a large measure the success and economy of your painting jobs. This does not mean that the responsibility for all your painting problems should be entrusted to the paint engineer. For one thing, a number of mills handle all their painting through paint contractors, and it then rests with the mill executives to see that essential precautions are written into the painting contract.

### *Metal Surfaces*

Structural steel and iron surfaces, tanks, ventilating units, and pipe lines require more frequent examination and more thorough cleaning than are usually required for wood surfaces. It is especially important that paint never be applied over dust; loose, scaly paint; or even slightest traces of moisture from condensation or other sources. The best method for cleaning these metal surfaces is by the sandblast. Where sandblasting is impossible, these surfaces must be scraped thoroughly, chiseled, and wire brushed. Grease can be removed with a cloth saturated with naphtha or another solvent.

In the case of galvanized metal which has been exposed to weathering, it is only necessary to see that the surface is clean and dry before applying a primer. New galvanized metal must be etched to avoid the wholesale peeling so commonly observed on these surfaces. One satisfactory way to do this is to treat the surface with a solution of 8 oz. of either copper acetate or copper sulphate to 1 gal. of water. Specially formulated zinc oxide primers show good rust-inhibiting qualities and help to maintain a distensible film with excellent adhering and enduring qualities.

Abstract of a paper presented at a meeting of the Textile Division, American Society of Mechanical Engineers, held Jan. 9, in New York.

Metal primers are of tremendous importance with conditions as severe as they are in many rooms in textile mills. Red lead is perhaps the best known of metal primers, although it is certainly not the only one. According to the findings of Henry A. Gardner, chief engineer of the Institute of Paint & Varnish Research, basic lead chromate is superior to other steel and iron primer paints. Metal surfaces subjected to extremely severe acid, alkali, and other destructive influences are best protected with an asphaltum or coal-tar type finish. There is still considerable difference of opinion about the use of aluminum, graphite, and other so-called "conductive" types of paints as primers; but there is substantial evidence that such paints induce galvanic action and a consequent breakdown of the surface when applied to bare metal. However, these finishes do serve very well as finishing coats.

### *Concrete and Brick*

One frequent condition encountered with concrete and brick is the peeling of paint around window frames and along dados. Almost invariably this results from moisture coming through from the outside, which backs off the paint. There are a number of ways of waterproofing this concrete or brick, but it must be done from the outside, and regular concrete paints or special waterproofing concrete mixtures should be used.

In structures in which improved non-porous concrete and brick have been used, inside walls may take a finishing coat of mill-white without the need of a sealer coat; but if fume-resisting mill-white or a gloss white is used, it will be necessary to use an under-coater. It is never advisable to omit the use of a sealing coat in the case of extremely porous concrete, except where moisture from behind limits you to the use of a porous type paint. Whether or not a sealer coat is used on these side walls, it is important that any grease or oil spots be thoroughly cleaned with a solvent and then sealed. Pure white shellac or aluminum paint seems particularly suitable for this touch-up work.

Concrete often presents an alkaline condition which must be neutralized to obtain a satisfactory paint job and proper drying of the paint film. This may be done by washing down the concrete with a solution made up of 3 lb. of zinc sulphate crystals to 1 gal. of water. A minimum of 48 hours should be allowed under normal drying conditions before attempting to paint, and it is advisable to brush down the surface to remove any remaining crystals prior to painting.

If the old film on a previously painted brick or concrete side wall remains in good condition, a simple washing down will prove more satisfactory than scraping, and, in the case of the weave room and possibly the slasher room, washing will prove more effective in removing size or mildew. Where there is excessive scaling, due to a previously applied cold-water paint or ordinary whitewash, it will be necessary to clean this off entirely. If the water paint has scaled off almost entirely, wire brush-

ing and dusting may be all that is necessary. After this procedure, it is well to get a coat of size applied as quickly as possible to prevent the absorption of moisture. The ceiling may then be painted, providing time has been allowed for it to dry thoroughly. In the case of the weave room, it is a good practice to apply a coat of special under-coater, followed with a coat of mill-white. Gloss is favored for both the weave and slasher rooms, due to the cotton lint and size which get onto upper surfaces and frequently start a mildew condition. The walls are finished in the same manner as is the ceiling.

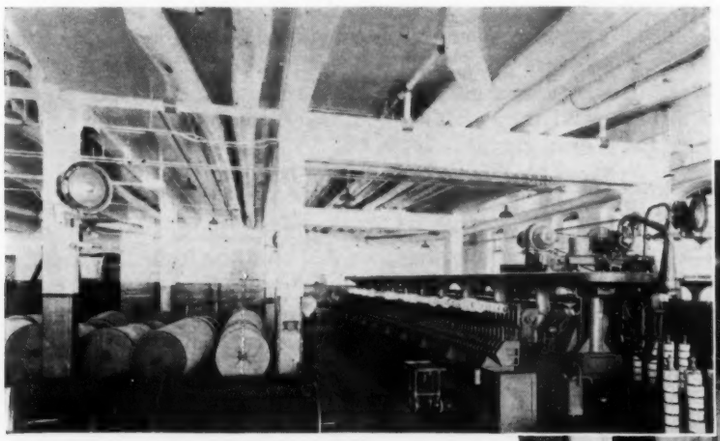
Wood is almost universally favored for mill ceilings, and practically all the wood used today has been treated with some wood preservative. Most widely used are the zinc chloride, chromated zinc chloride, and the zinc meta-arsenite methods. There is one thing to be remembered in painting wood treated in this way, the preservative does not stop the wick action of wood. Whether a porous type paint will be as satisfactory as a white paint can only be decided by analyzing the conditions in your plant. In some cases, fume-resisting white over a suitable sealer and under-coater may stand up. In other instances, aluminum paint seems to be the best answer.

In the mixing room there is a great deal of moisture to contend with. Unless there is good circulation of the air, there is very likely to be a mildew condition created due to the cold air pockets in corners. The steam that rises from the mixing tanks and vats carries a great deal of grease which floats with the vapor and settles on surrounding surfaces. Painting this particular room requires special care in thoroughly cleaning the surface and making certain it is absolutely dry before painting. Ordinarily the next step would be to apply a coat of special under-coater followed by a coat of fume-resisting, gloss mill-white; but, here again, you should draw upon the advice of the paint engineer representing the firm whose products you are using.

The jig room requires the same care in preparing all surfaces. Due to the presence of sulphur fumes arising from the sulphur dyes being used here, it is important that the paint applied be entirely free from lead. In many cases, use of aluminum paint seems justified in the jig room, and serves efficiently. It is important that the vehicle used be a high-grade, fume-resisting type.

The mildew problem is one that causes many mill executives considerable anxiety, particularly in the weave room and sometimes in the slasher room. Mills that have air-conditioned their weave and slasher rooms have overcome this problem almost completely. In fact, many mills have found that the nearest approach to a complete solution, not only of painting difficulties, but of certain manufacturing problems and undesirable working conditions is a thoroughly adequate air-conditioning installation. Fungus-resisting paints are sometimes used in these rooms to avoid the mildew condition, but most mills are using a regular mill-white gloss. If this is applied over a suitable under-coater and on a clean, dry surface, it may be expected to give good service for a considerable while.

Opening, carding, roving, spinning, and warping rooms present a less serious painting problem, and whether mill-white gloss or egg-shell is used depends somewhat upon the preference of the mill operator. Where gloss white is used, it is generally desirable to use an under-coater first. Egg-shell whites do not ordinarily require an under-coater, and, if the wall surface is not too badly soiled, one coat may suffice. In deciding the type of mill-whites, a point which you should consider is the comparative light reflection characteristics of egg-shell and gloss.



*Above: View in same warp preparation department after painting ceiling, walls, etc.*

*Below: View in warp preparation department of a Southern mill before repainting.*

In finishing pipe lines—with the exception of insulated steam lines, which are given a coat of size followed by a coal of aluminum—the trend is to finish with mill-white. Color identification of the various pipe lines is accomplished by painting the fittings.

All metal surfaces, other than actual machinery, should be well cleaned with a stiff wire brush and then well dusted off prior to applying a metal primer. Finishing coats in colors that blend in with the background will improve the appearance of your plant.

Finally, let me stress the importance of making your own simple tests on hiding power, spread, coverage, whiteness, and fume-resistance between competitive mill-whites. This is the only way you can be sure of the greatest paint value. Combined with full utilization of the paint engineer's services in analyzing your every surface, exposure, and finishing problems, this will bring you pretty close to a solution of your painting problems.

# CHECK AND DOUBLE-CHECK

## *Chart system for silk and rayon weave rooms tallies loom, weaver and fixer*

*By John Picone*

**LOOMFIXER'S CHART**

Name John Love Section A Date 2/6/36

| Loom No. | Cut No. | Description | Time Called | Time Fin. | Remarks |
|---|---|---|---|---|---|
| 14 | 5 | Banging off | 8:40 | 8:55 | Add-up broken |
| 26 | 3 | Rough cloth | 8:57 | 9:00 | Weave threaded shuttle wrong |
| 19 | 10 | Barré cloth | 9:05 | 9:10 | Tape overlapped |
| 22 | 7 | Pick stick broken | 10:20 | 10:35 | New stick |
| 40 | 1 | Shuttle flying out | 10:35 | 11:05 | New bumper and picker |
| 37 | 12 | Filling breaks | 1:05 | 1:20 | New tension |

Foreman's signature

James Johnson

IT HAS been the writer's contention for some time that the systems ordinarily used for checking up on the looms, weavers, and loomfixers could be improved. Recently, after giving some thought to this matter, he installed a system which shows the actual time a loom has been stopped for repairs, the cause of the trouble, the number of times the trouble has occurred, etc.

It often seems that every time a weaver is called to the examining table, he makes the loomfixer the goat by saying that he called the loomfixer as soon as the trouble appeared. In nine cases out of ten, however, the loomfixer has had no knowledge of even the existence of the defect. One result of the installation of the new checking system has been that the weaver can no longer make this statement unless it is true, because the nature of the defect and the time the loomfixer was called are recorded in black and white.

We also find that the new system has served to increase production, because now the weavers do not lose time hunting for the loomfixer. Furthermore, it is serving to keep the fixer on his toes, because when he is called to a loom he can no longer shrug his shoulders and say, "Oh, that's all right." He does the job as quickly and efficiently as possible, because his time is recorded. He completes each job in the proper order and does not waste time in making unnecessary trips between looms.

We also find that seconds are reduced and that it is now possible to determine the ability of weavers and fixers more accurately.

The heart of the system is the loomfixer's chart which is illustrated herewith and which can be made very inexpensively. A new chart should be given the fixer each day and the old one returned. The foreman, however, should examine the charts at various times during the day. They will show him at a glance whether there are any cases which should have his attention.

When a cut reaches the examining table, the charts covering its production are examined and the weaver and loomfixer graded accordingly. For example, on a given cut a weaver might be graded *A* and a loomfixer might be graded *C*. The reasons for the grading ought to be explained to both the weaver and the fixer in every case and they should be allowed to comment and offer suggestions.

The chart hangs at the loomfixer's bench; and when a weaver encounters trouble, he walks over to the bench and records the loom number, the cut number, the description of the trouble, and the time he makes the record. At his next opportunity, the loomfixer examines the chart, goes to the loom in question, and makes the repair. Then he marks the time finished and makes a notation concerning the trouble and its correction in the "Remarks" column.

If the fixers are likely to have numerous jobs at one time, it is a good policy to have the first notations made on a pad. Then, when the jobs are finished, the notations can be transferred to the charts.

It should be added that the chart is useful also in keeping tabs on supplies, as it shows when new sticks, pickers, bumpers, shuttles, tensions, etc., have been put on specific looms.

# PERMANGANATE-AMMONIA PRINTING

## *Ap specified on Army blankets*

ARMY specifications require that the initials "U.S." on blankets be stamped or printed by the potassium permanganate and ammonia method. This is an unusual process and one with which many blanket manufacturers are unfamiliar. Several mill men have asked the details of this method, as they do not appear to be available from the Quartermaster Department or in published form. Below is outlined the procedure followed in large blanket mill.

Initialing is a manual, block-printing operation. The blankets are run over an inspecting table, over which a guide board is arranged with an opening in the center into which fits the block or die carrying the letters. The wooden die is moistened by dipping it in the permanganate solution.

The solution is made up to a strength sufficient to give the necessary color, approximately 1 to 2%. That is, 1 to 2 lb. of potassium permanganate and 1 to 2 lb. of 18° Bé. ammonia are dissolved in 100 lb. of water. If 26° Bé. ammonia is used, only one-half as much is required. In some plants, Bentonite or a similar compound is added to the solution as a thickener.

The block has to be allowed to drain a moment in order to produce a neat print, and the print dries rather quickly, thus presenting no great problem in the immediate subsequent handling. The printing itself or any spatterings of the solution may be easily and instantly removed by the use of a 5 to 10% solution of commercial sodium bisulphite.

***DISCORD*** —The red and gray have no relationship in common as color forms. The two colors are totally unlike and therefore clash. The eye is disturbed by a "flicker" which destroys good sense of balance.

**HARMONY**— The same red and the same gray are made to accord by the introduction of a tone which contains red, white, and black. Analogy results because the forms are given a proper sequence.

# COLOR IN DESIGN . . .

## *Discord avoided—harmony obtained by adherence to few simple rules*

***By Faber Birren***

IN THE PAST, color laws were worked out on a spectrum of pure hues and then were applied to modified colors. That procedure has proved inadequate, and we are growing conscious that the harmony of color forms is just as important as the harmony of colors themselves. That color forms are important is readily proved by the fact that color-preference tests reveal surprisingly different likes and dislikes for pure colors, tints, shades, and tones. You may like red, but not pink; brown, but not orange; and so on. That is, modified colors, such as tints and shades, appear different and appeal differently from pure hues. A discussion along this line was presented in an article which appeared in the October, 1935, issue of TEXTILE WORLD.

### *Simple Visual Laws*

Color forms adhere to simple visual laws. Pure hues, white, and black are primary and combine to produce tint, shade, and tone, which are secondary. But color forms cannot be handled carelessly. Nor can the textile designer hope to solve the mysteries of harmony by studying the color circle alone or merely by thinking in terms of value, chroma, and what-not.

Shades will always grow dull on white, because they are opposites from the standpoint of basic color forms. Pure colors will always tend to glare on gray, because gray has nothing in common with pure hue. These facts are new and perhaps revealing to the average worker in color. Yet they are quite obvious and simple. They have their basic in natural, rather than dogmatic laws.

In the previous article it was explained that any straight line on the simple color triangle, shown on the next page, leads to beauty. The various examples given in the present article illustrate just how the triangle can be used to produce harmonious color effects and to avoid or correct discords.

All of these designs are presentable, the wrong as well as the right. No ludicrous attempt has been made to show gaudy extremes, especially bad ones which no designer would create in the first place. Rather, the desire has been to show fairly good arrangements and then to make them still better. The same color combinations have been used in each pair of designs. The lessons drawn are with reference to the harmony of color forms. This should emphasize the point that sequence counts and that the arrangement of forms within a design must be respected, regardless of what basic hues are used.

The choice of key colors is really simple compared to their harmony in modified forms. Style has many dictates that serve the designer. Also, the personality of the various hues in the spectrum is well known and should be given less attention by colorists. Warm hues make a warm effect. Cool hues do the opposite. Contrasting colors startle the eye, and adjacent colors are soft and mellow. The tricks of color arrangement are elemental. Forms are the difficult things to handle—for more ugliness follows violation of the color triangle than the so-called color circle.

### *Approaching a Color Scheme*

There is a good formula to be followed in approaching a color scheme. The first decision should be concerned with the form of the color that is to be made dominant. If style suggests a tint, then the problem

begins from here. What tints are most appealing? This would naturally come next, unless fashion also makes the decision as to the exact tint to be harmonized.

Next in order, the designer should study the triangle. What color forms will work best with a tint? He has several directions to follow. He can work the tint with pure hue and white; with tone and black; or with shade, tone, and gray. In each instance he will be observing good visual balance. With these limitations and possibilities in mind he will find his choice of second, third, and fourth colors far easier. He will think in terms of form first and color second.

This same type of reasoning can be applied if the key color is a shade, a tone, or a pure hue. It can even be applied when good effects are wanted on white or on black. The designer handles his forms surely and expertly. He understands that the human eye is just as much concerned with form as it is with hue, and that the

**BIRREN**
**COLOR TRIANGLE**
*(Copyrighted 1934 by Faber Birren)*

I. Pure colors harmonize with white and black.
II. White, gray, and black harmonize.
III. Color, tint, and white harmonize.
IV. Color, shade, and black harmonize.
V. Tint, tone, and black harmonize.
VI. Shade, tone, and white harmonize.
VII. Color, tone, and gray harmonize.
VIII. Color, white, and black (the primary triad) and tone harmonize.
IX. Tint, shade, and gray (the secondary triad) and tone harmonize.
X. All seven forms harmonize—pure hue, white, black, tint, shade, gray, and tone.

real secrets of beauty lie in those subtle analogies of sequence that make or break an appealing effect.

He contrasts his forms directly when he wants to kick over the traces. Shades on white, tints on black, pure colors on gray will lend a hand. He relates his forms when he wants to prove his talents and produce harmonies of unmistakable appeal. Color, tint, white; color, shade, black; color, tone, gray; tint, tone, black; shade, tone white—these are the sure roads. For power and strength he accords pure colors with white and black, and introduces tone if he seeks some restraint. For elegance he accords tints, shades, and gray on tone.

In a word, he works straight across the triangle or around it in an orderly way. His color forms are under control. He is on sure ground. The five examples of the way in which discord can be changed to harmony shown in the accompanying illustrations indicate some of the uses of the triangle. Careful study of it will disclose many other applications.

***DISCORD*** — Here pure colors and tones are placed on white. The effect has contrast, but the colors are made to suffer. Off-balance is readily sensed, which tends to startle the eye.

**HARMONY** — The pure colors are placed inside the tones, with the tones placed on gray. This follows a straight line on the triangle and creates a more mellow analogy with logical harmony.

***DISCORD*** — Pure colors, white, and black are primary forms and seldom look well on gray. While the discord may be subtle, it is nevertheless weak and violates the order of the triangle.

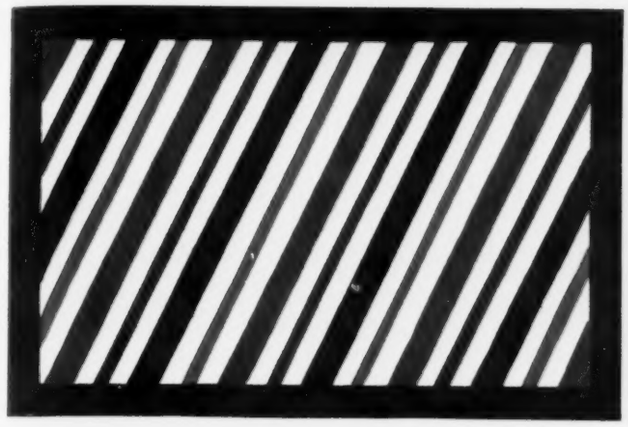
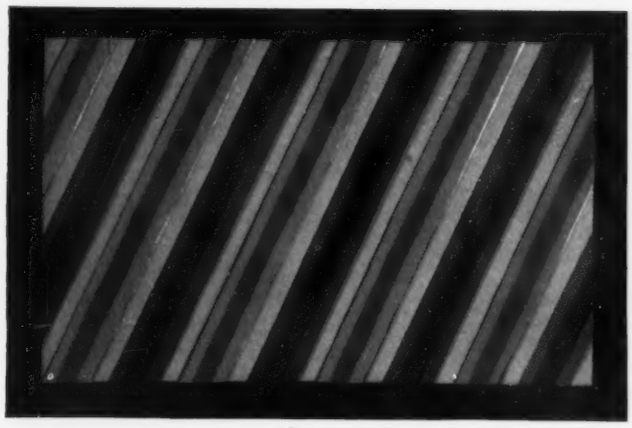
**HARMONY** — A tone is a perfect accompaniment for pure colors, white, and black. This is because tone contains all these three primary elements. This arrangement assures uncommon richness.

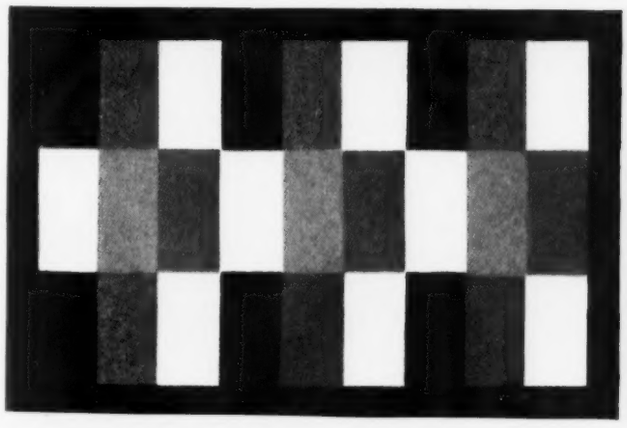
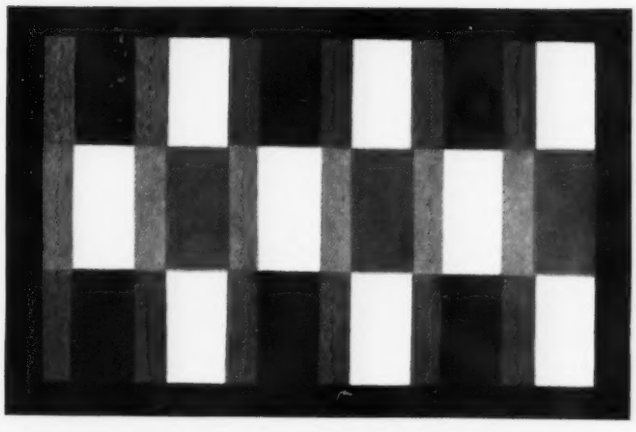
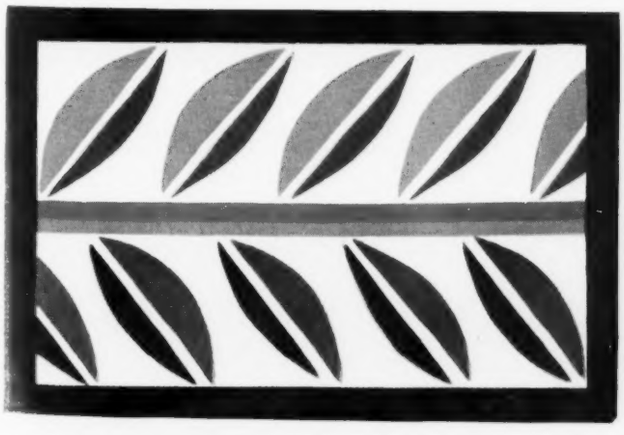
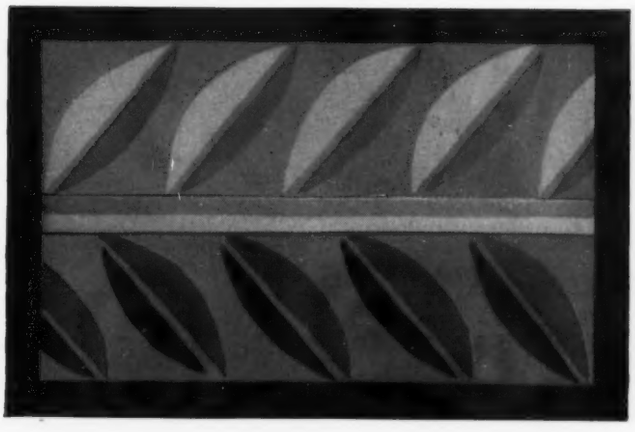
***DISCORD*** — An interesting lesson in sequence. The analogy from shade to tone to white is good. However, the placing of shade against white produces conflict, and the scheme lacks proper balance.

**HARMONY** — Here the same colors are used, but the sequence is changed. The shade is kept inside the tone. Thus the eye goes from a color with black in it to a grayed color, to white itself.

***DISCORD*** — This scheme is traditionally familiar. Yet the tints, shades and gray conflict rather than blend with the white. The result is contrast, and the color forms are not shown to advantage.

**HARMONY** — Here the tints, shades, and gray are displayed on a tone which has elements in common with them. The effect is soft and provides a key to one of the most beautiful of all analogies.

# NEW SWIM-SUIT SEARCH

*By Paul W. Niles*

## *Knitters are seeking novelties to protect their trade from further inroads*

WILL the knitters of swim suits permit other trades to eat into their profits another year? The so-called gingerbread pattern had one good season, when all concerned had their mail cluttered up with complaints. The old basic suit might return, just plain knit, with needle-out effects. The old knitter who knit women's union suits with a simple tuck and plain stitch, and used two lengths of cylinder needles where needed to bring out the full panel effect, could give ideas to the younger men of today who want to get away from fancy stitches and still have something different.

A panel that won't get flat easily could be made by not taking out needles but by cutting off the dial needle hooks and smoothing the ends—also taking out cylinder needles and replacing them with slightly shorter ones. For instance—

You want a panel of four needles (twenty in and four out). Take out four dial needles, cut off their hooks, and replace them. Then exchange the three cylinder needles (where the hooks are cut off in the dial) with needles that are, say, $\frac{1}{16}$ in. shorter. Count twenty and repeat. The whole idea is to have more yarn where the needles are out. The cylinder will pull a full-length stitch over the dial needles but will not stay in a stitch because there is no hook. Again the shorter cylinder needles will pull a longer stitch at that one spot. The result will be a very much raised stitch that is not hard to look at and certainly stays in a panel effect a long time (Fig. 1).

Waffle stitch! Oh, yes; no one likes it much for swim suits, but the women like it for heavy coats. And just how many knitters have puzzled it out on a circular machine? Actually, it's simple—two in, three out in dial; all cylinder needles in; tuck three on dial; run three ends in one feed with a very long stitch on that feed. This will leave a hollow square on the back of the fabric, which gives the waffle effect shown in Fig. 2. (The opposite side of this fabric, which is shown in Fig. 3, is another old 1900 style of women's fancy cotton underwear, with the exception that in the earlier period the fabric did not have the horizontal welt.)

Knitters who have circular machines equipped with two sets of dial cams, operating two lengths of needles, can make plain-stitch designs that will defy salt water. These designs will also defy many knitters when they try to figure them out. This machine is versatile, as it will pull back dial needles to clear the stitch entirely, will push out in regular stitch, or will hold for tuck stitches. Naturally, colors must be used for effect on all plain stitch, or no pattern could be seen. Checkerboard, vertical blocks, three-size (or more) stripes or blocks, lace effects with tuck stitch—and what a modern knitter could add with long latches or with a pattern wheel would make the old timers fall in a faint.

For a good example of what this machine can do, one should inspect an old toboggan cap of yesteryear. Imagine a knit cap, running from a folded 10-in. brim to a sharp point with a tassel on its peak. It was knit on a 10-in. circular machine and started with a four-tuck, knit very slack. This four-tuck ran about 5 in., then changed to two-tuck for about the same distance. Next the knitting changed again to, say, the pineapple stitch, then to a single tuck, and at last to plain stitch, knit tight. All this changing, which was automatic, was to allow for narrowing. The control was from a chain on a single drum. Even the tight and loose stitches were made by the old chain set-up that raised or lowered the dial at the exact spot needed.

Perhaps I have rambled too much, but I want to emphasize that, if knitters are to hold the swim-suit trade, they must be alive to conditions. Although there is not, perhaps, a doubt that knit-suit styles will stay, other trades will persistently cut in with novelties. The possibilities in novel knit patterns, however, have by no means been exhausted. A knitting machine of 1880 would do many things the modern machine of today can do, but it used only cotton or wool. Today we have more fibers and yarns to work with. Full use should be made of them. Mills which hire a good mechanic and let him experiment with their machines often develop successful new effects. And remember, knit swim suits still have the same important advantage that they had in the first place—the same advantage that first made young folks generally swimming conscious—they fit!

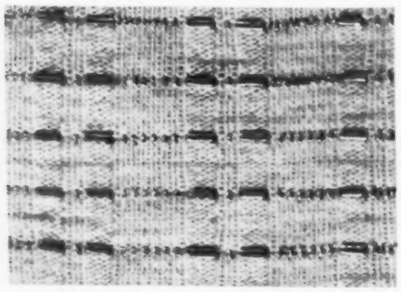


Fig. 1. A panel which will not flatten easily

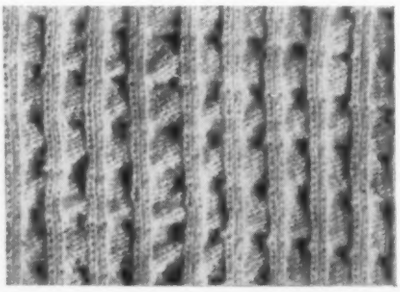


Fig. 2. Could we revive the waffle?

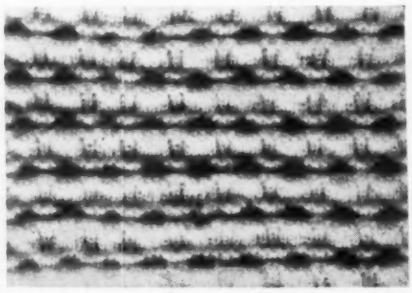


Fig. 3. Reverse of fabric shown in Fig. 2.

ADVERTISING PAGES REMOVED

# TEXTILE WORLD ANALYST

## *Effect of AAA decision reflected in manufacturing margins*

**Textile Mill Activity:** Despite the headaches which certain branches of the textile industry suffered in January, during the transition period after the AAA decision, a high level of mill activity was maintained, judging from such trends as could be weighed. We would estimate that activity as slightly over the corresponding month last year, which incidentally was a good one at the mills (and this can't be said for the month which immediately followed it). All of the above is subject to revision when actual statistics for January are available. . . . Complete statistics for 1935 show even a little better than our preliminary estimate of 15% advance in textile mill activity over 1934. The actual increase was 17%. 1935 was approximately 3% more active than the 1924-31 average, roughly assumed as "normal." (These estimates are based on total consumption of all fibers.)

THE story of the effect of the Supreme Court's decision upon gray goods prices is shown graphically in Table I. That table gives manufacturing margins on a representative group of carded cotton fabrics, the figure given being the number of cents difference between the selling price of a pound of these fabrics and the cost of a pound of clean cotton. Through December, of course, the processing tax had been included in the latter. It will be noted that on Jan. 8, the first date on which this margin was calculated without the tax, the margin rose sharply since the goods prices—which actually were only nominal—had not declined in proportion. By Jan. 22, however, the margin had dropped to 16.2c. or exactly the same as the average for December. In fact, the Jan. 22 margin was slightly under the average for 1935, which was 16.35c.

This means, unfortunately, that the profit possibilities of the gray goods prices after adjustment were not promising. It will be recalled that, after a spurt of price sanity in August and September, sellers let their margins degenerate to a point where chances for a profit were exceedingly slim. (See TEXTILE WORLD, December, 1935, page 107.) To get back to that status is not encouraging. However, it is expected that a snap-back will develop—and in fact may be under way by the time this issue appears.

Yarn prices made a better showing. From Table II it will be seen that manufacturing margin on carded yarns dropped to 16.9c. on Jan. 22, as against 16.3c. average for December. Actually, there has been much better profit possibility in yarns than in fabrics in recent months.

Outstanding trends in other divisions of the textile industry were:

**Wool:** The rise in wool during January embarrassed some mills which had figured on pricing their lines close to previous raw material values. If the rise persists, the fall situation will take on a different complexion with the now modest trend toward lighter weights, or coarser wools, or substitutes, becoming doubtless the feature of the market. The wool manufacturers' future hinges on whether consumer purchasing power can expand in pace with the rising trend in raw wool. Profits for 1936 hinge on cautious pricing as well as on inspired wool buying.

**Rayon:** Outstanding development was publication of rayon production statistics showing U. S. and world output in 1935 at new record high. (See page 61.) No real test has been made yet of the higher viscose prices named in December, because producers were heavily sold at the time of the advance and most January shipments were at the old level.

**Silk:** The raw material market held fairly steady in January. Importers were disappointed at slow spring call from hosiery manufacturers. In current business on broadsilks, low-end lines have sold at the firmest prices, quality goods being available at concessions.

**Knit Goods:** A generally good situation prevails in all three branches. The rise in hosiery prices has slackened in reflecting the half of the raw silk rise; leading firms issued spring prices in recent weeks and most were just a fraction above the fall levels. In the cotton branch, the processing tax mess has made the trade a bit jumpy. Underwear situation is more affected by processing tax and mills seem determined to hold firm—though indeed a few have upset the cart a bit by dropping prices. Demand is gradually becoming normal. In outerwear, spring activity and early summer business is pronounced and the whole picture is satisfactory.

**Processing:** Optimism prevails among cotton finishers in view of the fact that there is every indication they will succeed in their attempt to collect a 1½% surcharge on finishing bills. With the finishing industry as a whole operating at a loss, finishers felt that the additional levy was necessary to meet the increased costs resulting from new Federal and State laws and regulations—the social-security act in particular.

TABLE I. CARDED FABRIC MARGIN

| Date | Margin in cents | Date | Margin in cents |
|---|---|---|---|
| August, 1933.... | 21.4 | May, 1935..... | 16.0 |
| October, 1933... | 19.1 | June, 1935..... | 16.5 |
| January, 1934... | 18.4 | July, 1935..... | 15.2 |
| April, 1934..... | 17.6 | August, 1935... | 17.1 |
| July, 1934..... | 15.5 | September, 1935 | 17.9 |
| August, 1934.... | 16.6 | October, 1935... | 17.7 |
| September, 1934. | 18.6 | November, 1935 | 16.4 |
| October, 1934... | 17.4 | December, 1935 | 16.2 |
| November, 1934. | 15.8 | January, 1936... | 17.2 |
| December, 1934. | 16.2 | Jan. 8.... | 18.9 |
| January, 1935... | 16.2 | Jan. 15.... | 17.0 |
| February, 1935.. | 16.0 | Jan. 22.... | 16.2 |
| March, 1935.... | 15.9 | Jan. 29.... | 16.5 |
| April, 1935..... | 16.1 | | |

TABLE II. CARDED YARN MARGIN

| Date | Margin in cents | Date | Margin in cents |
|---|---|---|---|
| August, 1933..... | 23.5 | May, 1935..... | 13.8 |
| October, 1933... | 20.0 | June, 1935..... | 14.5 |
| January, 1934... | 18.3 | July, 1935..... | 14.3 |
| April, 1934..... | 15.9 | August, 1935.... | 15.3 |
| July, 1934..... | 14.7 | September, 1935 | 15.4 |
| August, 1934.... | 15.3 | October, 1935... | 15.8 |
| September, 1934. | 15.6 | November, 1935 | 16.3 |
| October, 1934... | 14.6 | December, 1935 | 16.3 |
| November, 1934. | 13.5 | January, 1936... | 18.4 |
| December, 1934. | 13.5 | Jan. 8.... | 21.0 |
| January, 1935... | 13.5 | Jan. 15.... | 18.1 |
| February, 1935.. | 13.9 | Jan. 22.... | 16.9 |
| March, 1935.... | 14.4 | Jan. 29.... | 17.7 |
| April, 1935..... | 14.1 | | |

## *Textile World's Price Index Numbers*

STARTING with January, 1936, TEXTILE WORLD has revised its price index numbers to a 1923-25 base, to correspond with current statistical practices. Those who wish to continue with indices based on July 1, 1914, for chart purposes or otherwise, can secure conversion factors to change the new figures to the old by writing TEXTILE WORLD, Statistical Dept., 1427 Statler Bldg., Boston, Mass. Figures on cotton manufactures, Aug. 1, 1933 to Jan. 6, 1936 include processing tax.

| | Cotton Index Numbers | | | | Wool Index Numbers | | | | Silk Index |
|---|---|---|---|---|---|---|---|---|---|
| Date | Cotton | Yarns | Gray | Colored | Wool | Tops | Yarns | Cloth | Raw Silk |
| 1923-25 average | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 1930 average... | 50 | 61 | 61 | 72 | 58 | 61 | 72 | 90 | 109 |
| 1931 average... | 32 | 58 | 46 | 59 | 46 | 49 | 49 | 71 | 32 |
| 1932 average... | 24 | 37 | 37 | 60 | 36 | 40 | 52 | 57 | 21 |
| 1933 average... | 39 | 56 | 55 | 50 | 53 | 59 | 62 | 80 | 21 |
| 1934 average... | 61 | 67 | 70 | 62 | 63 | 70 | 75 | 91 | 17 |
| 1935 average... | 60 | 68 | 67 | 69 | 56 | 58 | 70 | 88 | 22 |
| July 1935..... | 61 | 68 | 65 | 69 | 56 | 59 | 70 | 89 | 20 |
| Aug. 1935..... | 58 | 68 | 66 | 69 | 56 | 59 | 70 | 89 | 23 |
| Sept. 1935..... | 55 | 66 | 68 | 69 | 58 | 60 | 70 | 89 | 25 |
| Oct. 1935..... | 57 | 68 | 68 | 69 | 60 | 61 | 73 | 92 | 27 |
| Nov. 1935..... | 60 | 70 | 69 | 72 | 62 | 65 | 75 | 92 | 27 |
| Dec. 1935..... | 60 | 71 | 69 | 72 | 64 | 66 | 76 | 92 | 26 |
| Jan. 1936..... | 48 | 67 | 63 | 68 | 67 | 73 | 75 | 93 | 26 |

# Overseers'

**THIS DEPARTMENT**

***offers practical material for the use of overseers in meeting the daily problems of their jobs. It includes valuable suggestions on industrial relations in the handling of which both the overseer and the superintendent are involved. Under the heading "Kinks" appear short cuts in mill technique which have already solved problems in at least one mill and may help in yours. The central panel features material from a mill superintendent's diary which offers practical hints on various matters taken from actual mill experience. We solicit your contribution to this department—see panel on opposite page for details.***

▼

## *The Super's Remarks*

*Editor, Overseers' Corner:*

I was quite interested in the remarks of H. M. R. relative to the article entitled, "The Super Gets A Load Off His Chest." It is not only the textile line, but other big business as well, that fails to place real executives in key positions. Possibly this is due to the very fact that the business is so big, and minor executives are only interested in their own work and not its relation to the organization.

Real executives are organizers. They delegate responsibility and with it the necessary authority that should accompany it. Only by so doing can they properly hold their subordinates to an accounting.

As opposed to this picture, consider the staff under that minor executive who insists upon doing everything himself, so that it will be done right. He delegates neither responsibility nor authority. His subordinates cannot do anything themselves, because, irrespective of what they do, it is wrong, in-as-much as they have usurped authority. When such a man is absent, all work except the barest routine is held up. In some instances, even supplies from the stock room are delayed pending his return and signature.

What future is there for his understudy or the staff in general? His so-called organization cannot function or show its real worth and ability. On the other hand, it must assume all mistakes of this executive without an adequate opportunity to defend itself. Under such a set-up, individuals are held back and prevented from displaying their own abilities. It leads to stagnation both of men and work as there is no incentive to think and to improve methods and processes.

E. Z.

## *Quality Control Department*

*Editor, Overseers' Corner:*

"Quality Control," by R. S. J., seems to be an essay on what the overseer and his workers should be doing, but are not.

Why eliminate responsibility? The knowledge of being responsible and the ability to fulfill that responsibility afford keen satisfaction to all of us. The hardest job we undertake is the one we don't know how to do; and fail to admit it to ourselves. You place a man on the job and in a short time realize that he does not know it in detail. Should he be a willing worker and ready to cooperate, then teach him; it pays good dividends. Quality control, production control, and cost control lie with the men on the job, the workers, overseers, superintendent and owner, and no one man or department should be created to assume the responsibility of others.

Today, there is no reason why the superintendent and overseers cannot avail themselves of any information they desire in order to carry out the details of operation. Consult the advertisements and the Business Literature page of TEXTILE WORLD. Note that every manufacturer is willing and ready to explain how to obtain the best results and the longest service from his products. Each one is a consulting engineer in his line of service. It is a hard job for an efficiency engineer to put a nick in the human grain, but a consulting engineer can help to slick the finish.

N. S.

## *Keeping Overseers Informed*

*Editor, Overseers' Corner:*

The set-up of our company had the vice-president and the sales manager in New York, the treasurer at the central plant, and a mill manager at each division. Each division had a quarterly meeting in New York with the vice-president, sales manager, all salesmen handling the products of the division, the general production manager, the comptroller-general manager, and the mill manager present. At the meetings, every complaint was fired at me to take back to the mill. Immediately upon my return, the overseers had notes on the various complaints, so they had things well in hand when my copy of the quarterly meeting was received. The report was loaned to each overseer for a day, so he could see what kind of a battle awaited me at the meetings and give any assistance possible for future meetings.

On complaints direct to the mill, we found it advisable to let the overseers concerned read the whole letter and take a few hours to investigate before giving me the facts. When a letter came in from the vice-president or sales manager that referred favorably to the mill, it was read at the overseers' meeting and public praise handed out.

Inquiries about probable deliveries were taken up at the semi-weekly overseers' meeting, when possible, and plans worked out to meet the customer's requirements and help the sales department get business on delivery as well as on quality and price. When required to meet a price, we pooled ideas and on three occasions developed new products which enabled us to meet competition, make a fair profit, and, best of all, be the first in the field with a new product.

One of the most helpful results of keeping the overseers informed about conditions and business in general was the curtailing of much loose talk. Each and every overseer felt that he was a real and important part of the company and its business.

E. G.

## OVERSEER'S ATTITUDE

*(Based on an actual mill superintendent's notes)*

MOST everyone realizes how important it is for an overseer, as a representative of the company, to conduct himself in such a way that employer-employee relations are on a sound basis. Particularly in these days, however, there has been so much said on the subject that I am afraid some overseers don't quite know what it means to assist in building sound relations between the company and its workers.

I have in mind a particular case where a superintendent who is a good friend of mine had been giving his overseers lectures on the importance of treating the help fairly. It so happened that the superintendent and his overseer of winding did not see eye to eye about a number of things, and one day the overseer decided that it would be better if he quit and took another job that he had in mind. This was all done without any hard feelings, but as soon as the operatives in the winding room found that their overseer was leaving they went on strike. To make a long story short, it turned out that the overseer, in the honest belief that he was following out the superintendent's orders to be fair, had actually been

# Corner

## TOWARD WORKERS

*By John Williams*

so easy on the workers that they were willing to go on strike rather than have him leave. Needless to say, that overseer had done a rotten job of building up "sound" employer-employee relations. It is one thing to be fair, but it is something else again to be so soft that the workers look on you as sort-of a Santa Claus.

When I heard of this case, I began checking in my own plant, and I found that the attitude was not unusual. Some overseers think that they are doing the right thing if they are "pals" with everyone in the department, but it is obvious that you can be fair and still have discipline and respect from the workers. I came across one of my overseers yelling and swearing at a man who had done something wrong. When I asked the overseer about it, he said the man was a good friend of his so it was okay. Swearing never gets an overseer much respect, and getting on such a basis with a worker is not good business. The overseer should be helpful, friendly, and fair, rather than cold-blooded and impressed with his own importance; but sound employer-employee relations are never built on the basis of coddling the operatives.

### *Loss of Skill Through Unemployment*

*Editor, Overseers' Corner:*

There is one problem that many executives do not stop to realize these days.

Many workers of even the highest skill were forced to seek employment in other lines, if they could find it. They looked forward to the day when they could return to the work in which they had spent so much of their lives, perhaps their entire working days. Little did they realize how much skill they would lose in the months away from the mill, or the long period of time that would be required to regain that lost skill.

The worker who has been away from his usual vocation for any lengthy period has suffered a nervous strain that cannot be explained to anyone who has not experienced it. The ever-present discouragement as he tramps the streets seeking an opportunity to earn his living cannot be measured in dollars or units of lost skill. When that worker returns to his original position, he must be handled much the same as a green worker. He must be allowed to get back into the swing of the task and reacquire that sense of hearing that means so much to him as he listens to the hum of the machinery.

These faculties cannot be reacquired in a day or two, and no one can tell just how long it will take. There are those who can never come back to their former efficiency. The forced unemployment has eaten into their very vitality. This is absolutely true, and no man has any right to consider himself an executive who cannot, in some measure, fully appreciate the controlling factors as far as the unfortunate worker is concerned.

RUSSELL J. WALDO

## KINKS

### *An Aid to Machine Tying-In*

Where a tying-in machine is used, particularly in the weaving of velvet or plushes, new methods must be used to take full advantage of the machine operation. Overseers of such weaving departments are familiar with the fact that, at the end of the warp, there are always a few—and sometimes a large number—of ends that have to be straightened out before the tying-in machine can be put in operation. To eliminate the time lost, it is suggested that there always be two crosses in the warp when weaving, so these crosses can be used for the tying-in machine when the warp is woven out, and so there will be no necessity for straightening any of the ends.

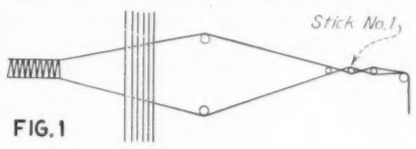


FIG. 1

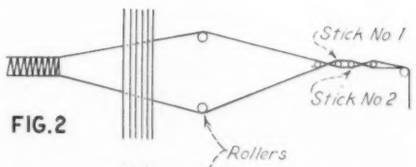


FIG. 2

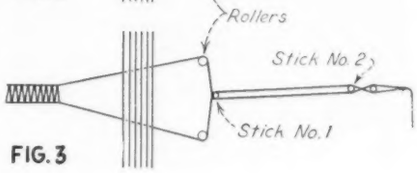


FIG. 3

This is how to proceed:

After the original warp is tied in, leave two crosses instead of one, as shown in Fig. 1. Leave the sticks in all the time when weaving. When the warp is run out, place another stick (No. 2) in the same shed as stick No. 1, as shown in Fig. 2. When this has been done, loosen the warp as much as necessary so that stick No. 1 can easily be pushed toward the rollers, as shown in Fig. 3. If this procedure is followed, you will always have two crosses ready for the tying-in machine and no ends to straighten.

HERMAN HESSE

### *Stains from Tenter*

We were troubled by rusty tentering-pin marks on piece-goods selvedges, and also with grease and oil stains during the drying of delicately shaded fabrics.

Upon examination of the machines, it was found that the pins were rusted at the point where they joined the chains of the machine, also that the greater percentage of the oil and grease strains came from the links of the chain.

To eliminate the difficulty, a 1½-in. wide white tape in roll form on a bobbin was used. The machine was set in motion and the tape wound on the chains of the machine. Stains then, and for some considerable time afterwards, were negligible. It was found that the tape covered the rusty portions of the tentering pins, and also prevented the grease and oil from reaching the fabric. As the tape became dirty the stains began to occur again. The tape was promptly taken off, scoured clean, dried, and again run on the chains of the machine. The tape can be used indefinitely and saves its cost inside two days. The tape used should be wide enough to overhang the chains of the machine.

F. L. A.

## CONTRIBUTIONS

*to the "Overseers' Corner" will be paid for without regard to length. We will be glad to use letters discussing the super's diary or any other pertinent matter whether of mechanical, managerial or just plain human interest. Those who contribute kinks will be paid additional for an appropriate sketch to illustrate their device. It is not necessary to submit finished drawings. If these pages interest you—contribute something to them to interest others. Address Editor, Overseers' Corner, Textile World, 330 West 42d St., New York, N. Y.*

# QUESTIONS AND ANSWERS

## *Cotton Mock Filling*

*Technical Editor:*
We shall appreciate any information that you can give us that will help to locate the trouble we are having in making a mock filling. We run both colors and white stock identically the same way in the card room; single-process picking, same weight laps, through the same cards, set the same way, same weight sliver; single-process drawing, same weight drawing; slubbers and intermediates the same, also same weight or as close as possible to get them. The roving for this yarn is never allowed to get over 1 grain per sizing apart. This roving is then mocked on the filling frames, and we are running into difficulties through its shading and showing up both in the filling itself and in the cloth. The cloth will show dark and light streaks, due to some of the filling blending instead of mocking. We have checked and rechecked all of the processes and done everything that anyone here can think of, but have not located the trouble. (8289)

You have mentioned a number of things you have checked; but you have not stated whether the cottons are of the same staple and grade for both colors and white stock; whether the weighting on all drafting rolls on the same processes is the same (especially the last roving process and spinning); whether all settings are the same; whether the tensions on the roving frames are approximately the same, so that there are no uneven spots, even though the weighings are close; or whether machine speeds and other conditions are the same.

We do not know what experiments you have tried, but we might suggest the following: Separate the two rovings as they are fed to the back roll and allow them to go through all the rolls of the spinning frame, separated though running on the same bosses. Have the rovings or the drafted fibers twisted together as they leave the front roll. This idea will keep the two rovings separate (although possibly it will be necessary to clean lint or waste from the rolls and clearers more often) until they are actually put together and will not allow such easy mixing of the fibers.

Whether the following suggestion will be of use to you depends upon how much cloth is woven at one time, or how much yarn is required, but we recommend it if you find it feasible: Dye sufficient cotton for one or two orders, tagging this stock and keeping the waste, etc., separate all through the mill. Then dye cotton for each additional one or two orders. Keep these separate; in other words, do not allow each dyed batch to follow the previous one on the same order. Do not allow the colored rovings from one batch to be doubled with those from another in the roving operations.

Possibly you are throwing your sliver, roving, and scavanger waste back into the opening or picker mixes in too large quantities.

We do not know just how your spinning rolls are weighted; but we suggest, nevertheless, that you consider the feasibility of a little heavier weighting on your spinning rolls and a little wider setting between your back and middle rolls on the spinning frames. Perhaps there is too much variation on spindle speeds. Have you tape-driven spinning frames? Are you taking the raw stock right from the bale and dyeing it dirt, leaf, and all? If so, we recommend you give your baled cotton a good cleaning and opening before dyeing. Colored stock is generally somewhat harder to process than white stock, and possibly there is a little too much twist in the colored rovings from the intermediate.

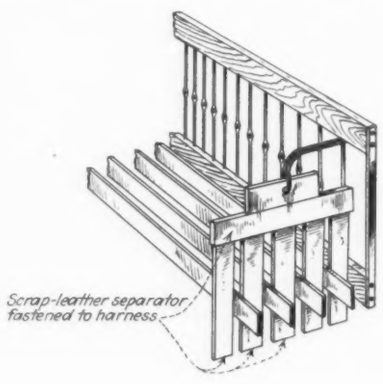
The sample of cloth and particularly the sample of yarn, both of which you provided after the above was written, indicate that the stocks are not being drafted evenly on the spinning frame. There are thick and thin spots throughout the yarn, and they are the same for both stocks, whether natural or black. It is probable that this trouble is due to drafting rolls which have become eccentric. This may be due to the rolls being sprung or to their necks being worn. Possibly the cause of the difficulty is dry top rolls or bad cots. Worn rings might contribute to this, as well as uneven ballooning, due to traveler trouble.

## *Knotting Crepe Warps*

*Technical Editor:*
We take the harnesses out of the looms and put them in the twisting frame and use a knotting machine to knot in new warps. In doing this we are taking off the drop wires, as they tangle, and redrop them when we have the warp in the loom. Do you know of any practical apparatus or rigging we could use in knotting crepe warps in the twisting frame without having to take off the drop wires? (8265)

We do not know of any special apparatus for rigging drop wires. However, with proper rigging of the drops and a little care, there is no need of removing them, and we are sure they will not tangle.

In rigging up the drops when removing the harness from the loom, first run your cross behind the warp; then on the first drop rod tie a cord across the warp, fastening the cord taut to the drop rod. This will keep the ends from falling and becoming tangled. Move this rod up close to harness and run another cord across the front side of the drop rod.




Repeat this on each bar or drop rod. After this is done, tie up the four drop rods so that they are about at the center of the harness. Next bring the cross or lease cord up close to the harness and tie a cord between every other section around the drop rods and the cords, which have been strung across the warp on each rod.

You are now ready to cut the warp from the beam, and extreme care should be used; otherwise the warp ends will fly back. It is better practice to cut two sections at a time. When the harness is in the twisting frame, do not remove the cords under the drops and also use care to keep the ends from becoming loose.

When tying up the warp after it has been knotted, lay a cloth between the drop rods and harness completely across the entire harness. This will save many an end from breaking.

Also, cut two separators from scrap leather at least 2½ in. wide, as shown in the accompanying sketch. These are fastened to the harness between the drop rods, one on each side. The separators are used to keep the drop rods from rubbing together and causing the warp ends to break or snarl. The slots in the leathers should be cut just enough to permit the drop rods to fit snugly. Have a warp paper cut about 8 in. wide made into a V-shape, to cover the drops both top and bottom. When tying the drop to the harness, try to have the drops about half way to the heddle eye.

## *Deposit on Soaked Silk*

*Technical Editor:*
We are inclosing one skein of 13/15 silk, on which you will note there is quite a deposit. We have been using the same soaking formula for quite some time. Recently, however, this deposit has begun to show up on a few of the skeins in every bath. We shall appreciate your enlightening us as to just what this deposit is, what might cause it, and what we should do to overcome it. It is quite serious and causes us considerable trouble in winding. (8302)

In some cases, a deposit of this kind is due to the formation of lime soaps, etc., caused by the reactions of the soaking oil and hard water. At other times, the deposit is not necessarily attributable to hard water, but is due to the raw oil in the soaking oil leaving the soaking solution too rapidly for the silk to take it up uniformly and evenly. Consequently, when the bath is drained, the scum which was on top of the bath filters down through the bath and fixes itself to the silk. To prevent deposits of the first type, it is essential to use soft water.

In this particular case, the deposit is free oil. This can be removed by a soaking in gasoline. On subsequent lots it would be advisable to produce a more stable silk-soaking emulsion. If the emulsion is a soluble silk-soaking oil, it should be made with water of a lower temperature. This will increase the stability of the emulsion. If the soaking formula is made by the use of soap and raw oil, more soap should be used, or the soap solution should be cooler before the raw oil is added to the soap solution to make the final soaking emulsion.

# QUESTIONS AND ANSWERS

## *Difference in Stitch*

*Technical Editor:*
We are inclosing herewith one stocking in the gray, full-fashioned, 3-carrier, 3-thread, 25 turns left. Kindly give us your opinion as to the cause of the difference in stitch at foot and the leg. (8279)

The sample submitted shows that the texture in the foot is entirely different from the leg. The leg stitch is even and uniform, while the foot is irregular and distorted. We believe that the distorted stitches in the foot are due largely to the silk on the footer drying out and not being properly conditioned. The footer is not producing a clear "knitty" stitch.

The first few inches of the foot which adjoins the leg are of a better texture than is the portion adjoining the toe, where the barre or washboard is more pronounced. This is due to a change in character of one of the cones of silk, which seems to be the main offender. This end of silk appears lighter in color and produces a two-tone effect, even in the gray, which would indicate a softer twist or a greater number of fine filaments than the other two cones. The footer seems to be sized reasonably close to the leg; that is, the courses per inch are approximately the same, and if the leg had been footed with the same silk as used in the leg, the trouble would not have occurred.

## *Defect in Milanese*

*Technical Editor:*
Inclosed you will find a piece of milanese fabric which has an imperfection I am trying to eliminate on one of the machines. This fabric is made from 20/22 gum silk on a 28-gage machine. The imperfection does not occur at the same place on the machine, and I get about ten of these in a piece of 190 racks. What do you think is causing this? (8278)

A study of this defect under the microscope indicates that four needles have dropped stitches, but have picked them up again within the next few courses. Still further examination discloses two ends of silk about ¾ in. long projecting into the drop-stitch hole. By carefully raveling this fabric at the hole, we were able to find one strand of silk which had a knot where the two ends project.

This is the only thing which we can find wrong at the defect. We are inclined to believe that these "tails" may be the cause of the defect. Perhaps they prevented the yarn or yarns from being laid into the needles properly.

## *Light Spots on Worsted Yarn*

*Technical Editor:*
Inclosed you will find two samples made from Bradford-spun worsted yarn. On the indicated sample there are light spots where the dye apparently did not penetrate. As the yarn is identical, we can find no explanations for these light spots. Are these light spots caused by foreign matter (fibers that are not wool)? If so, would it be possible for you to identify them and let us know what is actually causing our trouble. (8277)

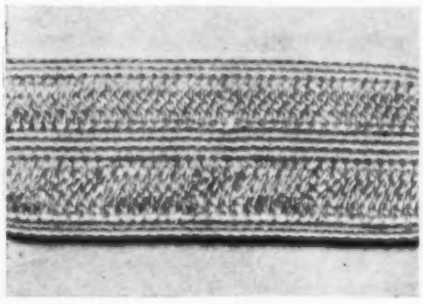
Examination of the fabric under the microscope shows that it is interspersed

with white undyed fibers, having the same average diameter as the dyed wool, but showing neither the central lumen nor the scales characteristic of wool. However, as the bulk of the wool is of a glossy nature, it also shows no scales. These white fibers are present throughout the sample, but in spots are grouped more closely together, giving the appearance of a white spot on the goods. Any individual fiber is either well dyed throughout or else entirely devoid of color throughout its full length. If these were kemps, they would be cloudy in appearance and would show more plainly to the naked eye. The sample was stained with a solution which gives distinct colors with various textile fibers, and it was noted that many of the foreign fibers stained as if they were acetate fiber, but for a space on the end they gave the shade of ordinary cellulose, indicating that they might be fibers of acetate that had been saponified by the action of alkalis in places. Other fibers showed the color of viscose throughout. Either the yarn has been made with an admixture of shoddy, which has been contaminated with some synthetic fibers; or the goods, while being knit, have been able to take up from the air some fly lint from some other machines that were knitting such fibers and hence, when dyed as a wool fabric, the other fibers remained undyed. We can only report their presence, but cannot state definitely how they came to be in the fabric.

## *Underwear Web*

*Technical Editor:*
We are inclosing a sample of elastic, and would ask you to give us any information you may have regarding this sample. (8294)

Without going into a detailed analysis of the sample fabric, we may state the following facts: This 1-in. braided fabric is known as a women's-underwear web. It is made on a 49-carrier flat braider using all of the carriers. There are 21 bobbins of mercerized cotton, one end on a bobbin; and 28 bobbins of rayon, one end on a bobbin. These are set into the braiding machine in four-rayon, three-cotton order. The three



outer posts on either side of the braider, and the four central posts each carry one end of blue-white rubber. The stretch is about 250%.

## *Linen Is Stained*

*Technical Editor:*
We are sending you by parcel post a sample of linen which was cold-water shrunk. You will note that it is yellow in places. We have had the water tested and found it to be O.K. We are also sending small cut of this goods which has not been cold water shrunk or sponged. Can you tell us why the goods turn yellow? Do you think the discoloration is due to the presence of chloride of lime in the fabric? (8261)

In our opinion there are two distinct causes of yellowing or changing of color in this linen. The large piece marked "cold-water shrunk" has one or two small places that show a distinct iron reaction. Likewise, in this piece of cloth there are some yellow or brownish areas which are air stained, due to the fact that the fabric was probably not dried uniformly and sufficiently fast to prevent the formation of the stains.

The fabric marked "city water" has a brown folded wrinkle running across the piece, which does not show the presence of iron but is evidently an oxidation stain, due to one of the folds of the fabric being exposed for a long time to the air. There are one or two small circular spots in this piece of goods that give a distinct iron reaction.

The piece marked "not treated" evidently has had one corner dipped in water, and all the way across this brown area is a distinct iron stain.

# Correspondence

## *Sinker-Cam Adjustment*

*Technical Editor:*

In reference to the article on page 94 of the November issue of TEXTILE WORLD on sinker-cam adjustment in seamless hosiery knitting, I should like to add that it is the proper setting for sinkers to have the bottom of the throat of the sinker even with the inside back of the needle when the sinker is at its full inward position. This applies when using a yarn about the right size for the gage of the machine. Sometimes, in making special goods, a heavier yarn is required, and it is then necessary to move the cams to give the sinkers slightly less throw to accommodate the heavier yarn. Also in setting the bumper screws, the writer has always obtained a better fabric by setting the sinkers so as to have them come to the full inward position just as the needle is coming up. With this adjustment, the sinkers aid materially in knocking off the old loop, giving less strain on the yarn and yielding a more even-faced fabric. Test for heel, toe, and gore evenness, after both bumper screws are set properly, by knitting a short piece of fabric by both back and forward stitch cams. Any difference in cams can be adjusted, and the heel and toe fabric will be even and both gores will be alike.

G. W. SHEELEY.

# THE PERSONAL PAGE

**Allen McNab,** of Boston, president of Pelzer (S. C.) Mfg. Co. and subsidiaries, has resigned because of ill health. As in the last few months, the companies will continue under the direction of **Merrill C. Hastings,** Boston, treasurer.

**Henry P. Benson** was re-elected president of Naumkeag Steam Cotton Co., Salem, Mass., at annual meeting Jan. 16. **Ernest N. Hood** was re-elected treasurer and other officers were re-elected to their respective posts.

**Charles A. Cannon,** president Cannon Mills Co., Kannapolis, N. C., has been elected one of the three vice-chairmen of the Business Advisory Council for the Department of Commerce, Washington, D. C. The executive committee includes **H. P. Kendall,** president of the Kendall Co., Boston, and **George A. Sloan,** president of George A. Sloan & Co., New York.

**D. B. Coltrane,** 93 years old, but active as a man of 60, and head of textile mills at Concord, Landis, and Norwood, N. C., was re-elected president of the Concord National Bank, of Concord, N. C., at the recent annual meeting of the board of directors; **C. A. Cannon,** president of the Cannon Mills Co., was re-elected first vice-president, and **T. H. Webb,** president of the American Cotton Manufacturers Association, was re-elected second vice-president of the bank.

**John T. Maguire,** president, Textile Banking Co., has resigned that post, it was announced Jan. 16 by Harvey D. Gibson, chairman of the board of the company. **Louis J. Moran,** secretary, has also resigned. Mr. Maguire has opened offices at 51 Madison Ave., New York.

**J. Ben Doar, Jr.,** has been elected secretary of the F. W. Poe Mfg. Co., Greenville, S. C. He was auditor for several years.

**Walter A. Spicer** was elected assistant general manager of the Sanford (Me.) Mills at the recent annual meeting. This is a new office. **William H. Marland** was elected president and general manager.

**Alfred Pate,** formerly superintendent of Soule Mills, New Bedford, has been elected treasurer and a director of Charlton Mills, Fall River, succeeding the late James Sinclair.

**F. J. Olewine** has been elected vice-president of May Hosiery Mills, Nashville, Tenn.

**Jules E. Beuret,** of Beuret & Co., selling agents, New York, has resigned to join the selling business of **Allen L. Goldfine.** Mr. Beuret was also president of Wakefield (R. I.) Textile Co., Inc., recently acquired by Mr. Goldfine.

**A. L. Emerson,** head of the Warrensburg (N. Y.) Woolen Co., is the newly-elected president of the Emerson National Bank of that place.

**J. H. Shine,** former president of the Hope Knitting Co., Cohoes, N. Y., has been appointed City Comptroller at that place.

**Mayor Michael Cavallo,** of Lodi, N. J., has been appointed general manager of the Millbank Finishing Corp., at Lodi, it is announced by **John P. Hagerty,** president of the company. Mr. Hagerty, who had been general manager, now will divide his time between the plant and the New York trade.

*Ferdinand Thun*

*Henry Janssen*

**Ferdinand Thun,** president, Berkshire Knitting Mills and **Henry Janssen,** president, Textile Machine Works, both of Wyomissing, Pa., lifelong friends and business associates, are the honor guests of communities throughout the Reading, Pa., area, this month. It marks the occasion of their 70th birthdays. Mr. Janssen became 70 on Feb. 8, while Mr. Thun celebrates his anniversary on Feb 14. Civic bodies in Wyomissing, Reading, and elsewhere have arranged various ceremonies as testimonial to these leaders in recognition of their contribution to the development of the Reading textile district.

The two started up in textile manufacturing there in 1892 and have been closely affiliated, both by business and friendship ever since. Mr. Janssen, who was born in Barmen, Germany, in 1866, came to the United States in 1888. Besides his machinery manufacturing and hosiery interests he is active in civic and cultural affairs; he is a member of the American Academy of Political and Social Science. Mr. Thun, likewise a native of Barmen came to the U. S. in 1886, two years before Mr. Janssen. For all his concentration upon hosiery manufacture which has made his company the leading hosiery company of the world, Mr. Thun too has maintained keen interest in civic affairs. He has been president of the Council of Wyomissing, Pa., since it was organized in 1906.

**Edwin M. Rock** has been appointed associate sales manager of C. K. Eagle & Co., Inc., it is announced by John Evans, sales manager for the company. Mr. Rock was 30 years with Post & Sheldon.

**R. H. Freeman,** president of the Newnan (Ga.) Cotton Mills, has been elected to the board of directors of the Citizens & Southern National Bank, of Savannah, Ga.

**Harry T. Viall,** formerly with Manville Jenckes Corp., has become associated with the sales department of Hope Webbing Co., Pawtucket, R. I.

**Frank Scull,** formerly director of sales in the Acele department of Du Pont Rayon Co., has resigned his position after nearly 18 years of service with the company.

**Clyde L. Carnahan** has been re-elected president of the Empire Worsted Mills, Jamestown, N. Y. **Hjalmer Swanson** is vice-president and general manager, and **Wright D. Broadhead,** secretary and treasurer.

**Harry Stephenson** was re-elected president of Southern Bleachery & Print Works, Taylors, S. C., at recent annual meeting. Other officers were also re-elected.

**Leonard H. Mellor** has resigned as superintendent of Putnam (Conn.) Spinners, Inc., after 12 years association with that company. He had previously been general superintendent of the National Spun Silk Co. for six years. He has not announced his future plans.

**Edward J. Wolfendale** has been installed as president of the Arlington Mill Overseers' Association, Lawrence, Mass. **Reuben Thomas** is vice-president.

**Albert L. Mulcahey** has resigned his position as superintendent of dyeing, finishing, inspecting, and shipping of the Shelton (Conn.) plant of Sidney Blumenthal & Co., Inc. Prior to joining the company, in 1928, Mr. Mulcahey held a similar position with Collins & Aikman Corp., Philadelphia.

**H. B. Miller,** for a number of years division manager of the Shelby (N. C.) plant of Consolidated Textile Corp., has been appointed superintendent of mills Nos. 1 and 2 of Pee Dee Mfg. Co., Rockingham, N. C.

**Lee Sack,** formerly superintendent of Thermo Mills, Hudson, N. Y., has taken a similar position with Yund, Kennedy & Yund, Inc., Amsterdam, N. Y.

**Walter H. Glenn** has succeeded **Robbins Lowe** as assistant superintendent of Locke Cotton Mills Co., Concord, N. C. Mr. Lowe is now associated with the Charlotte (N. C.) office of Saco-Lowell Shops.

**N. F. Gibson** has resigned his position as instructor in the yarn manufacturing department of the Textile School of North Carolina State College to accept a position with Rocky Mount (N. C.) Mills in the research department.

**Burris Snow,** an overseer in the Osprey Mill of Bibb Mfg. Co., has been elected mayor of Porterdale, Ga.

**John E. Wright,** superintendent of weaving divisions Nos. 1 and 2 at Riverside & Dan River Cotton Mills, Danville, Va., has resigned.

**J. E. Markowitz** is now general manager of the Fulton (N. Y.) Silk Mills.

**W. G. Day,** superintendent of Cowpens (S. C.) Mfg. Co., has resigned to become assistant professor of carding and spinning in the Clemson College (S. C.) Textile School.

**George B. Moore** recently assumed his new duties as superintendent of the Whitney (S. C.) Mfg. Co. He formerly held a similar position with the Gainesville (Ga.) Cotton Mills.

**C. A. Grainger** has been appointed superintendent of the Anderson (S. C.) Cotton Mills, succeeding the late J. R. Manley. He formerly held a similar position with the Monaghan Mills, Greenville, S. C.

**C. H. Lockman** has become superintendent of Cowpens (S. C.) Mfg. Co.

**Robert M. Ensign,** Winsted (Conn.) Hosiery Co. paymaster, has resigned

after 45 years' service. Mr. Ensign began with the company in 1890. Only two have been with the hosiery company longer, **E. B. Gaylord,** president-treasurer, and **Edward E. Moffatt,** head of the hosiery department.

**Lanier Branson,** president of Graniteville (S. C.) Mfg. Co., and president of Sibley Mfg. Co., and Enterprise Mfg. Co., Augusta, Ga., has left for an extended trip to California, stopping in Cuba and Panama. In Mr. Branson's absence, **Stoney Drake** will devote the major part of his time to operation of the Sibley and Enterprise plants at Augusta.

**E. O. Steinbach,** secretary, treasurer, and general manager of Durham Cotton Mfg. Co., East Durham, N. C., has resigned in order to become manager of Florence Mills, Forest City, N. C.

**J. C. Farmer** has been appointed assistant superintendent of the Carolina Cotton & Woolen Mills, Spray, N. C.

**E. M. Devine** has become night superintendent of the Dover Mill, Shelby, N. C.

**Ray Butler,** formerly with Martha Mills of B. F. Goodrich Co., Thomaston, Ga., has been appointed assistant to J. C. Truslow, general superintendent of the mills of the Carolina Cotton & Woolen Mills Co., with headquarters at Spray, N. C.

**O. R. Blalock,** for 13 years secretary of Leward Cotton Mills, Worthville, N. C., has become treasurer and general manager, succeeding **W. L. Ward,** who has retired from that position after 16 years' service.

**Otto R. Hartmann** is now associated with Millbrook Woolen Mills, Inc., Yantic, Conn. He had lately been with the Rome (N. Y.) Soap Mfg. Co.

**Sam H. Elliot,** superintendent of Delta Finishing Co., Philadelphia, for the last 10 years, has become superintendent of Fairforest Finishing Co., Spartanburg, S. C., succeeding **James Brown,** who is resigning due to poor health.

## *Textile Calendar*

**Committee D-13, American Society for Testing Materials, spring meeting, Washington, D. C., March 11, 12 and 13, 1936.**

**Thirty-second Annual Knitting Arts Exhibition, Commercial Museum, Philadelphia, April 20 to 24, 1936.**

**American Cotton Mfrs. Assn., Annual Convention, Pinehurst, N. C., Apr. 30-May 2, 1936.**

**National Cotton Week, June 1 to 6, 1936.**

## *Obituary*

**J. Foster Smith,** aged 75, agent for Naumkeag Steam Cotton Co., Salem, Mass., died at his home there Jan. 27. He had been connected with Naumkeag since 1879, and agent since 1918. He was widely known throughout the industry and was particularly prominent for his interest and ability in employer-employee relations.

**Merle Bell,** 55 years old, head of the Bell Co., Worcester, Mass., with associated units in Rhode Island, died suddenly Jan. 22. He was a leader in production of fancy worsteds on a volume basis. He started a business in 1912 with 28 looms which grew to control four mill units.

**H. Roy Horton,** aged 51, vice-president and general manager of J. & P. Coats, Inc., of Rhode Island died Jan. 24. He had been with the firm for 35 years and had been general manager since 1927.

**John C. Ferguson,** aged 67, for five years until 1933 president of Eclipse Machine Co., Elmira, N. Y. and for 40 years with the firm and its predecessors, died Jan. 7.

**George G. Haddow,** aged 65, secretary of William Crabb & Co., Newark, N. J., and with the firm for over 46 years, died last month.

**Robert E. Hightower, Sr.,** aged 71, chairman of the board of Thomaston Cotton Mills, Peerless Cotton Mills, and Thomaston Bleachery, all of Thomaston, Ga., and of Griffin (Ga.) Mills and Aldora Mills, Barnesville, died on Jan. 12.

**Major E. E. Boreham,** aged 59, who retired recently as vice-president and a director of Celanese Corp. of America, died in New York on Jan. 13. Major Boreham, who had been in the British army, came to the United States in 1917 to form the company.

**David Duncan,** aged 42, Providence, R. I., secretary of the Lonsdale Co. and associated with Goddard Bros., mill agents, died Jan. 2, following a long illness.

**Charles B. Healey,** aged 61, treasurer of Hartford Rayon Co., Rocky Hill, Conn., died on Jan. 4.

**Aime E. Bonin,** treasurer and manager of Bonin Spinning Co., Woonsocket, R. I., died early last month.

**Bertrand J. Horton,** aged 72, founder of Queen Dyeing Co., Providence, R. I., died on Jan. 7.

**William Cooper Hunneman,** president and director of the Carded Woolen Manufacturers Association, died Jan. 11 at his home in Roxbury, Mass. He was 78 years old and formerly a director of Bates Mfg. Co. and president of Edwards Mfg. Co.

**Solomon Lamport,** aged 65, president of Lamport Mfg. & Supply Co., New York, and uncle of Samuel C. Lamport, died Jan. 25.

**Charles D. Silleck,** aged 79, president of John Boyle & Co., cotton duck, New York, died Jan. 24.

## *Ellenbogen Bill Hearings Draw Textile Leaders to Washington*

*(Continued from page 57)* and G. H. Dorr, chairman, Cotton-Textile Institute; R. R. West, president, Riverside & Dan River Cotton Mills Co.; Herman Cone, treasurer, Proximity Mfg. Co.; Fred W. Steele, general manager, Grinnell Mfg. Corp.; Earl Constantine, National Association of Hosiery Manufacturers; and Herbert Gutterson, Institute of Carpet Manufacturers of America.

A positive argument was advanced by Dr. Murchison, who pointed out that the Cotton-Textile Institute is now securing signatures to a voluntary agreement to maintain the basic provisions of the old NRA codes. Mr. West made a strong plea that Congress, instead of continuing to try to "shackle" the textile industry, devise legislative action whereby the market for textile products might be broadened and the industry protected from foreign competition. Mr. Steele pointed out that the bill would not only penalize the industry, but would also be harmful to the interests of the workers, whom ostensibly it was supposed to help. Mr. Cone entered a vigorous denial of statements made earlier in the hearing to the effect that his company had increased the working hours and cut wages.

### *Proponents of Bill Heard*

In sponsoring the bill before the committee, Mr. Ellenbogen maintained that most sections are constitutional although frankly expressing some doubt of the feasibility of the 35-hour clause which he characterized as a compromise between the Black 30-hour bill, and the 40-hour week which was made general under the codes. Members of the committee seemed quite insistent upon the necessity of establishing the constitutionality of the bill—evidently remembering the experiences encountered by other acts of Congress lately. One member said: "If we can't make the bill constitutional, we should not bother with it." The chairman, however, indicated on the first day that, if the bill is not deemed constitutional, the committee itself might draft its own measure.

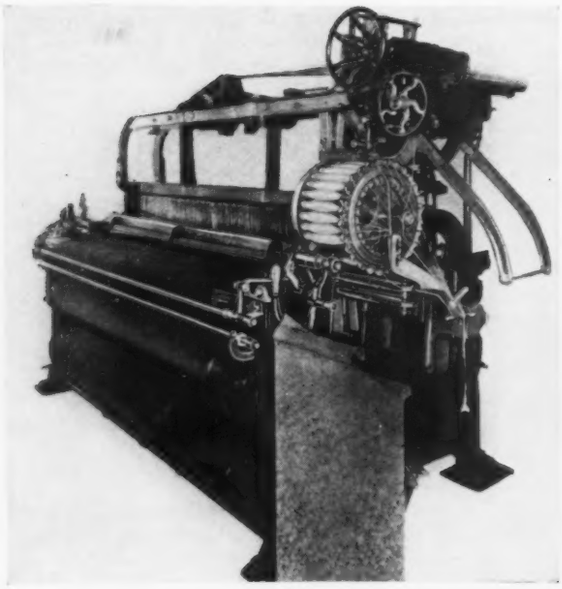
An extremely long brief was submitted by Thomas F. McMahon, president of the UTW, in behalf of the bill. Mr. McMahon traced the history of the textile industry for 15 years, presenting a picture of conditions which fair-minded persons would have difficulty recognizing. William E. G. Batty, secretary of the New Bedford (Mass.) Textile Council, stated that "the obvious inability of the textile industry for effective and equitable self-regulation is ample justification for the National Textile Act." "All persons competent to judge," he added, "say that the industry can be stabilized on no basis other than a national one."

### *New Bill Drafted*

After the hearing had progressed to the afternoon of the fourth day, Rep. **Keller,** chairman of the sub-committee, announced that he had requested Gregory Hankin and George W. Lindsay, NRA attorneys, to draft a supplementary bill. He emphasized that it was not a substitute for the Ellenbogen bill —the idea being merely to have both bills before the sub-committee so that from the two might be produced the best possible measure.

This precipitated a good old-fashioned brawl within the sub-committee. Rep. Wood, of Missouri, objected violently to the introduction of the supplementary bill. Finally, the sub-committee decided to wash its linen in private, meeting later in executive session with the result that the Hankin-Lindsay bill was not placed before the committee.

# NEW MACHINERY



## *Single-Pick Looms Made Automatic*

William H. Baker, 645 Beacon St., Boston, has developed single - pick, three - shuttle - mix equipment, whereby a regular 2x2 or 4x4 box loom can be changed over to an automatic loom, giving one pick from each of three shuttles in succession.

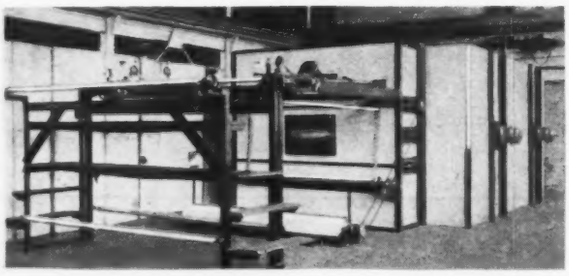
The mechanism consists of a train of gears, attached to the lower driveshaft, which work in conjunction with a mechanical feeler placed over the top box on the left-hand side of the loom. On the right-hand side of the loom there is a rotary magazine handling one kind of filling, and under it a specially constructed two-cell shuttle box. When the feeler indicates that a bobbin has to be changed, the shuttle is driven across into the top box under the battery, and, as soon as the shuttle from the lower box leaves the battery side, a locking device comes up and locks the boxes. At the same time, the binder on the lower box is opened. The hammer on the magazine then descends, placing a full bobbin in the shuttle and knocking the empty bobbin through the lower box, which is empty.

It is stated that having movable boxes under the battery, in an adjustable box guide, permits the placing of the shuttle in the proper position under the battery at all times, thus avoiding bad transfers. Unevenness of the yarn, either in count, color, or twist, is counterbalanced by taking one pick from each of three shuttles in succession.

## *Induced-Draft Tenter Dryer*

An induced-draft tenter dryer designed to handle velvets, rayons, and pressed felts, as well as woolens and worsteds, has been developed by James Hunter Machine Co., North Adams, Mass. The machine can be built in multiple units of one, two, three, four, or more sections, depending upon the production required.

The new dryer is totally automatic, and is fitted with variable-speed transmission, remote control, indicating thermometer, width-adjusting motor, gage to show boiler pressure, automatic selvage opener, automatic chain oiler, automatic temperature control, limit switches, and automatic cloth guider. One man can take care of the operation and cleaning of the machine. The housing proper consists of metal-clad panels filled with heavy insulation, and all main bearings are outside the housing in view of the operative. The columns on one side of the dryer are moved in and out by screws



fitted with a worm-gear drive and self-aligning bronze nut in each upright. They are operated by a fractional-horsepower motor equipped with push-button control. An indicator mounted on the front of the dryer shows the width of chain setting.

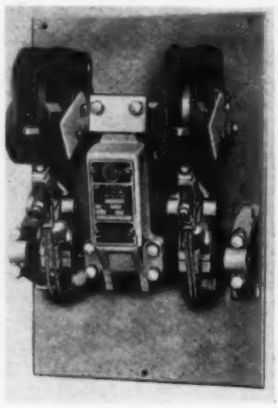
Air circulation is produced by a large-diameter centrifugal fan (one to each section). The fan may be driven directly on the shaft extension of the motor, with all bearings outside, or it may be driven by a pulley fitted to the fan shaft.

## *Vibration Damper*

Strength, compactness, and a high degree of vibration isolation for medium and light machinery are the points featured by Korfund Co., Inc., 48-15 Thirty-Second Place, Long Island City, N. Y., in the Type-T Seismo-Damper. With this damper, the machine is directly supported by a T-iron separated from a base of two angle irons by natural cork or other isolating material. The angle irons are connected by bolts passing through the isolating material and the T-iron (but not touching it), and these bolts are adjusted to produce a precompression of the isolating material to suit the machine load. Where the machine frame is light or must be supported at several points, the T-iron can be extended to form a continuous support between two or more Seismo-Dampers. Sizes from 100 to 2,500 lb. capacity are made.

## *Lighting Unit*

A self-contained industrial lighting unit, with color characteristics said to approach daylight very closely, has been announced by General Electric Vapor Lamp Co., Hoboken, N. J. Known as the Circular Mercury-Incandescent, the unit combines a circular mercury-vapor tube and an incandescent lamp beneath one reflector. The high blue and green characteristics of the mercury-vapor tube are blended with the excess red emission common to incandescent lamps, and the new light is particularly recommended for industrial lighting applications involving accurate color differentiation or critical inspection. The unit itself contains the auxiliary for operating the mercury-vapor tube, and it is installed and connected to the line in the same manner as an ordinary unit for incandescent light.

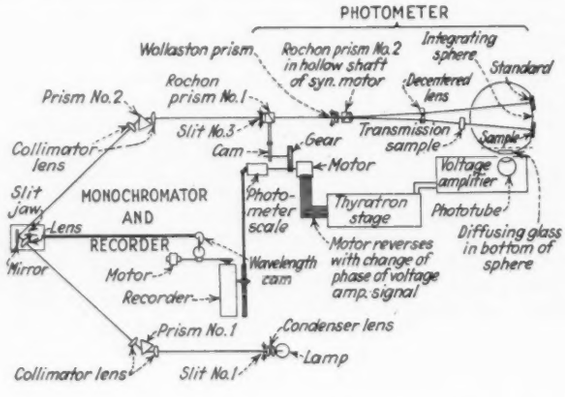


## *Magnetic Contactor*

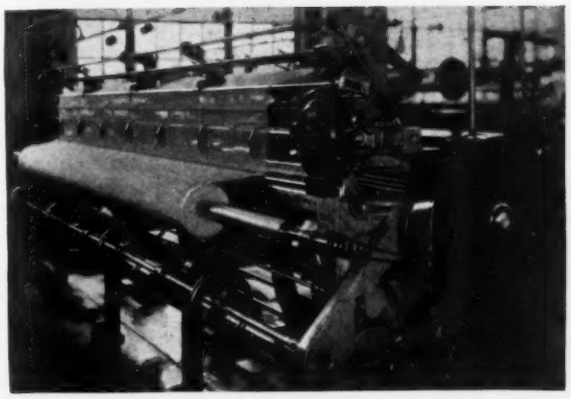
The EC&M Type LTZ line-arc contactor for built-in use has been announced by Electric Controller & Mfg. Co., 2700 East 70th St., Cleveland, Ohio. The units are built of light-weight aluminum alloy and are available in 100, 150, and 300 amp. capacity. Armatures are full-floating, and the mounting is designed to eliminate hum and chatter. Bearings are of the self-lubricating type and are self-aligning.

## *Color Analyzer*

General Electric Co., Schenectady, N. Y., has developed the Recording Photoelectric Spectrophotometer for the analysis of color, either as reflected or transmitted by the sample. The material is placed in the instrument, operation is started, and in less than 3 min. a chart is produced which shows the quantity of each wave-length of light. The instrument consists essentially of a monochromator, photoelectric photometer, and means of recording their respective indications. The monochromator is of the double-dispersion prism type, and is equipped with bilateral slits which are adjusted automatically for a 10-millimicron band. The photometer combines the polarization method of photometry with a photoelectric balancing scheme in such a manner as to eliminate from the measurements the factors of light source, phototube characteristics, and amplifier sensitivity.



# AND PROCESSES



## *High-Speed Warp-Knitting Machine*

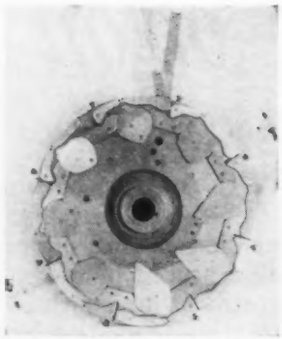
The Super Tricot flat, warp-knitting machine, capable of operating at better than 300 r.p.m. and 40 racks per hour, has been developed by Collins Loom Works, Inc., Amsterdam, N. Y. The machine can handle silk, rayon, cotton, or wool and can produce fabrics ranging from light nets to heavy overcoatings. Under actual mill conditions, the Super Tricot has operated at better than 90% efficiency, with one operative running seven machines. The model is available in widths from 72 to 180 in. and is supplied with an electric stop-motion, devised by Paul Quick, of the Kingsboro Silk Mills, Gloversville, N. Y.

## *Single-Shuttle Ribbon Loom*

Suitable for weaving cotton, rayon, tinsel, and elastic ribbons, the Saurer high-speed single-shuttle ribbon loom has been placed on the market by Saentis, Inc., Union City, N. J. A feature is that each loom of one shuttle forms a separate unit, with automatic stop-motion for both warp and filling. One to three cross-wound warps, placed on cylindrical cardboard tubes, can be used, according to the requirements of the ribbon. A speed of 600 picks per min. is attainable and ribbons can be woven up to 1¼ in. in width.

## *Feedwater Heater*

For use wherever exhaust steam is available for heating boiler feedwater, Worthington Pump & Machinery Corp., Harrison, N. J., has developed a non-deaerating type of stationary heater. Features listed by the manufacturer include the following: interchangeable pan system which provides a definite and unchanging flow of water in jets and drops, exposing maximum surface to the steam; water is heated to within 2° F. of the saturated - steam temperature within the heater; scaling has no effect, hence high efficiency is maintained indefinitely; multi-baffle separators assure oil-free feedwater; a two-pass filter removes all suspended solid matter.

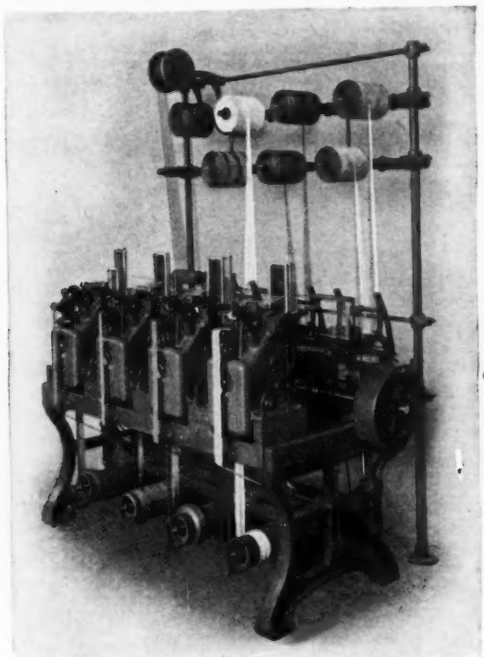


## *Automatic Double-Butt Tuck Machine*

Development of an automatic double-butt tuck machine of interest to underwear and outerwear manufacturers has been announced by Scott & Williams, Inc., 366 Broadway, New York. This machine is an adaptation of the automatic body machine in various diameters and cuts previously offered by this company. The dial cap of the former machine has been radically changed and specially cammed to produce, by means of four different types of needles, a multiplicity of tuck patterning effects impossible to obtain on the older machine. With this new model, it is stated that hundreds of different patterns—both panel and all-over—can be obtained quickly and without any expense for cams, etc.

This multiplicity of patterning is due to special swivel cams operating needles of different butt and latch lengths; also to changing position of tuck feeds and various combinations of needles. The machine, being automatic, will knit any desired length to tuck fabric and then change to plain fabric as desired. The machine is fitted with an automatic slackening device, which, in connection with specially constructed dial needles, permits the knitting of fabric with extremely lacy effects. Quite a wide variety of patterns can be made without using all four types of needles, but the maximum variety requires all four. Either 1x1 or Swiss camming can be used; but for most types of patterns, 1x1 cams seem preferable, as 1x1 designs stand out more prominently.

While the machine produces a great variety of new patterns, it also furnishes the various tuck stitches of the "snuggie" type previously produced, and new "snuggie" type patterns. Another advantage cited for this new method of tucking is that it permits one to make extremely lightweight fancy fabric for summer wear or heavier fabrics for winter and outerwear without change of cylinders and dials.



## Business Literature

**Stainless Steel.** Joseph T. Ryerson & Son, Inc., Chicago. Beautifully illustrated booklet showing the many uses of Allegheny stainless steel.

**V-Belt Drives.** T. B. Wood's Sons Co., Chambersburg, Pa. Illustrated 43-page catalog describing Wood's V-belt drives and containing engineering data and specifications.

**Sheaves.** Allis-Chalmers Mfg. Co., Milwaukee, Wis. Revised 16-page bulletin 2188-A describing recently extended line of Duro Brace Texsteel sheaves for stock drives to 15 hp. Includes dimension tables of all sheaves, complete horsepower and center-distance tables for all recommended stock speed ratios, and price list for sheaves and various standard lengths of Texrope belts.

**Boilers and Stokers.** Combustion Engineering Co., 200 Madison Ave., New York. Illustrated 16-page catalog describing details of sectional-header C-E type boiler as built for a wide range of steam pressures, capacities and different methods of fuel firing. Illustrated 16-page catalog describing improvements in Coxe stokers and drives. A two-page blue print shows typical settings as applied to different types of boilers.

**Steam Turbines and Small Transformers.** General Electric Co., Schenectady, N. Y. Bulletin describing details, specifications and applications of steam turbines for the mechanical drives of pumps, fans, compressors, blowers, pulverizers, etc. Bulletin devoted to small transformers for control and signal circuits, containing ratings and data.

**Lubrication Manual.** Alemite Division of Stewart - Warner Corp., 1878 Diversey Parkway, Chicago. Industrial lubrication reference manual containing articles on common causes of bearing failures, lubrication of anti-friction bearings, grooving of bearings, gears and their lubrication, etc. Illustrated with photographs and diagrams.

**Controllers.** Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland, Ohio. News releases describing (1) furnace draft controller and (2) indicator-controller.

**Testing Equipment.** American Instrument Co., Inc., Silver Spring, Md. Bulletin describing (1) a wrapping machine and (2) special tensile jaws for testing cotton by the Chandler Bundle method. The bulletin also covers Aminco fabric-testing instruments including a Flexometer for measuring flexing properties of fabrics, Permeameter for measuring permeability of fabrics to air, and a compressometer for measuring thickness, compressibility, and compressional resiliency of pile and similar materials.

**Alloy Iron.** Republic Steel Corp. Illustrated 12-page folder containing information pertinent to Toncan copper-molybdenum iron and including complete physical properties and constants.

**Pumps.** Allis-Chalmers Mfg. Co., Milwaukee, Wis. Series of folders describing several different types of centrifugal pumps for various applications.

**Electrical Tachometers.** Esterline - Angus Co., Indianapolis, Ind. Bulletin describing advantages of indicating and recording electrical tachometers. Also, leaflet devoted to miscellaneous time - saving devices, such as electric counters, cable clamps, chart inspectors, etc.

TEXTILE WORLD'S

# Cotton Digest

ONE of the most inspiring recent demonstrations in the cotton industry was the meeting at Charlotte last month attended by executives representing some 3,500,000 spindles and featured by affirmative action on the matter of voluntary agreement to conform with basic NRA code provisions. In fact, this tended to confirm in a striking way Frank I. Neild's statement that the "steady and healthy growth of self-regulatory action" was the outstanding development of last year in the cotton textile industry.

One particularly encouraging feature of the latest move in self-government is the fact that a number of manufacturers who honestly do not believe in the effectiveness of voluntary agreements nevertheless are signing up out of a desire to play ball with the majority. That's a very practical form of cooperative attitude.—*Editor.*

## *Yarn Groups Vote To Continue Wage And Hour Provisions*

Nearly 300 textile executives, representing 3,500,000 spindles producing carded and combed yarns in the South and East, met at Charlotte last month and voted unanimously for continued adherence to principal provisions of the NRA code, according to reports. At the same time, a method was worked out for solving problems created by invalidation of AAA and processing tax.

The vote in favor of continued code adherence was considered by observers to indicate that these manufacturers will cooperate with the Cotton-Textile Institute in its program of pledging individual manufacturers to this plan of operation. Copies of the pledge were distributed at the meeting and many manufacturers were reported to have signed at that time.

Among those present were Dr. Claudius T. Murchison, president of the Institute, Sidney P. Munroe and several field men of the Institute, Thomas H. Webb, president of the American Cotton Manufacturers Association, W. M. McLaurine, secretary of the A.C.M.A., W. H. Suttenfield, president of the Southern Combed Yarn Spinners Association, and S. B. Cooper, chairman of the Carded Yarn Group.

•

## *"Self-regulatory Action" Outstanding Development Of Year—F. I. Neild*

"The steady and healthy growth of self-regulatory action" was the outstanding development of the last year in the cotton textile industry, according to a statement of activities made last month by Frank I. Neild, president of the N.A.C.M. A self-imposed curtailment program, accompanied by a strong sentiment against accepting business at a loss, found the industry in an improved position with the arrival of the fall selling season, he said, adding that continuance of this cooperative movement would mean more steady employment and greater prosperity in textile communities as well as a reasonable profit for investors. The statement also touched on a "more reasonable method of raising funds for farm relief" and Japanese competition.

•

## *Gaston County Division Of S.T.A. Met Jan. 24*

The winter meeting of the Gaston County Division of the Southern Textile Association was held Jan. 24 at Gastonia, N. C. Opening, cleaning, carding, twisting and spinning problems were discussed. A detailed report of the meeting will be published in next month's issue of TEXTILE WORLD.

•

## *Nashua to Make Changes; Net Loss $1,327,591*

A shift in merchandising, whereby Nashua Mfg. Co. will sell primarily to wholesalers on the Nashua and Indian Head lines, is the first of the changes that it was indicated would take place in the company when the annual report was issued showing a loss of $1,327,591 for the fiscal year ended Nov. 2, 1935.

Inclosed with the statement mailed to stockholders was a copy of the report made to the directors by executive vice-president Richard Lennihan, in which, after stating that he did not believe the company should be liquidated, he set forth his recommendations as follows: A study should be made of products the equipment can produce and more modern methods of merchandising installed; the policy of maintaining a small inventory with rapid turnover should be continued; following a survey, all buildings, machinery and other property not required for profitable operations should be disposed of.

•

## *A.C.M.A. Meeting Apr. 30-May 2*

Annual convention of American Cotton Manufacturers Association will be held at Pinehurst, N. C., Apr. 30 to May 2.

•

## *Yarns, Fabrics Uncertain*

The as, if and when of rebate payments had both yarn and goods markets pretty well stymied through much of January. Spinners adjusted prices in conformity to invalidation of the tax, but their customers seemed indifferent. The goods situation was substantially similar, with customers maintaining a hold-off attitude on both gray and finished goods on all except emergency orders.

•

## *Comparative Textile Chart*

Scheuer & Co., New York, are distributing the 1935 edition of their Comparative Textile Chart. The chart includes a price history of 38½ in., 64x60, 5.35, covering the years 1926 to 1935 inclusive. A new feature is a record of monthly average mill margins of two combed-yarn constructions, a broadcloth and a lawn, which record covers the last six years.

•

## *Cotton Price Trend*

Key cotton prices of Jan. 25 and a month ago, contrasted with those of the last two years follow:

| | Jan. 25 1936 | Jan. 2 1936 | Feb. 1 1935 | Feb. 1 1934 |
|---|---|---|---|---|
| Spot Cotton, N. Y. | 11.95 | 12.20 | 12.55 | 11.75 |
| Ditto, high previous month | 12.90 | 12.35 | 12.90 | 11.75 |
| Ditto, low previous month | 12.55 | 11.65 | 12.65 | 10.45 |
| 10s frame spun yarn | 26c | 29½c | 28c | 27½c |
| 10s/2 carded skeins | 25½c | 29c | 27½c | 28c |
| 20s/2 carded peeler warps | 28½c | 32c | 30½c | 31½c |
| 60s/2 combed peeler warps | 55c | 59c | 57c | 59c |
| 60s/2 mercerized cones | 68c | 72c | 70c | 74c |
| 37 in., 3-yd. drill | 8½c | 9½–10c | 9½c | 9½c |
| 38½-in. 64x60s | 5 15/16c | 6½c | 6½c | 7c |
| 36-in. 4-yd. 56x60s | 7½c | 8½c | 7½c | 7½c |
| Denim, 2.20s | 14c | 15½c | 15c | 15½c |

•

## *December Statistics*

Statistics of particular interest to cotton manufacturers, showing December operations and the raw material situation:

Spindle activity .....103.8% capacity, or 6,803,980,354 spindle hours
Cotton exported .....877,480 bales
Cotton imported ..... 12,738 bales
Cotton consumed .....498,329 bales

November operations for comparison:

Spindle activity .....101.1% capacity or 6,897,420,223 spindle hours
Cotton exported .....1,134,874 bales
Cotton imported ..... 7,403 bales
Cotton consumed ..... 507,836 bales
Cotton ginned to Dec. 1.....9,362,343 bales

## *Industry Briefs*

**Customs** receipts earmarked under AAA amendments have been allocated. It was hoped to gain some of this fund for cotton goods export subsidy, but such use is not mentioned in the current allocation.

**Otis Co.,** Three Rivers, Mass., has not been leased to Boston interests as was inaccurately reported in these columns last month.

**"Texaco Star,"** a publication distributed by the Texas Co., New York, to 100,000 Texaco stockholders and employees throughout the world, has just appeared with an attractively printed cotton fabric cover to give added stress to the fact that the issue is a "Cotton Number." Out of 24 pages, 15 are devoted to articles and illustrations on cotton and the cotton industry.

**Boshamer & Co.,** Philadelphia, have appointed Fred W. Frank, Chicago, as exclusive representative in the Middle West on cotton yarn. Mr. Frank will continue to represent Dixie Mercerizing Co.

**WPA awards,** made Jan. 25 on bids opened Jan. 21, totaled 19,810,000 yd. cotton goods.

**New Bedford (Mass.) Textile School** has started a series of seven lectures on cotton and its manufacture, given at the school, 7.30 p.m., each Thursday, from Jan. 30 to March 12.

**Picket Cotton Mills, Inc.,** are now supplying combed as well as carded yarns to the knitting trade. Boshamer & Co., Philadelphia, have been appointed exclusive selling agents.

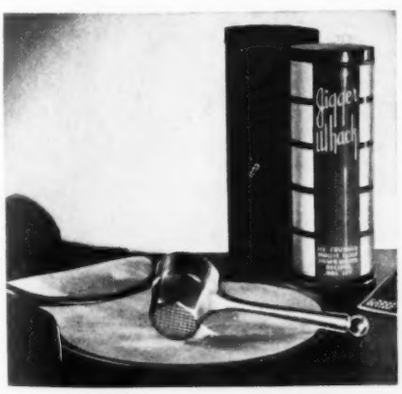
**Standard-Coosa-Thatcher Co.,** Philadelphia and Chattanooga, has appointed two selling agents in the thread division —Ireland Bros. in Philadelphia, and Rowe-Gardiner Co. in Amsterdam, N. Y.

**Catlin-Farish Co., Inc.,** has been appointed selling agent for Clyde Fabrics, Inc., Newton, N. C.

**James H. Dunham & Co.,** New York dry goods jobbers who have been at it since 1931, are now located in new quarters at 345 **Broadway.**

**Avondale Mills,** Ala., have completed the removal of its central offices from Birmingham to Sylacauga.

**Frank M. Bennet Co.,** New York, has become department of Iselin-Jefferson Co.



*Cotton-Textile Institute reports growing popularity of a novel ice-crushing set which, consisting of a cotton duck bag and chrome-steel mallet, now bids fair to become standard equipment for well-appointed cellarettes or recreation room bars. The bag is of 12 oz. army duck, and about 6 x 9 in.*

## COTTON IN THIS ISSUE


| | page |
|---|---|
| Retroactive Talk Tangles AAA Mess Again | 55 |
| New England, Aroused, to Remove Local Handicaps | 58 |
| Trouble at the Let-Off—A Neglected Motion | 62 |
| Variable Speed Spinning at Clark Thread Co. | 64 |
| Reel-Type Roll Improves Penetration in Warp Sizing | 67 |
| Constructions, Finishes, Uses of Staple Cotton Goods | 68 |
| Cotton Mock-Filling | 94 |


## *Cotton Mills News*

**Buck Creek Cotton Mills,** Siluria, Ala., have installed a Hermas shearing machine bought through Carolina Specialty Co., Charlotte, N. C.

**Wilcox Lace Co.,** Middletown, Conn., has installed a new lace loom shipped from Long Eaton, England, which is designed to produce lace of all widths.

**Pepperell Mfg. Co.,** Mill No. 1, Lindale, Ga., is installing 31,000 spindles of the latest-type Saco-Lowell spinning frames.

**Ludlow** (Mass.) **Mfg. Associates** have awarded general contract to Barclay White Co., 22 N. 36th St., Philadelphia, Pa., for main mill and adjoining buildings at Edge Moor, Wilmington, Del.

**American Auto-Felt Corp.,** Grand Rapids, Mich., plans expansion program during 1936 to increase output at mill at least 100%. Additional equipment will be installed.

**Bodees American Fabrics, Inc.,** Yale, Mich., have awarded contracts for construction of a plant valued at $350,000 to manufacture yarns from flax.

**Magnolia** (Miss.) **Cotton Mill** is planning the construction of an addition to its plant to house new machinery.

**Quaker Lace Co.,** Gouverneur, N. Y., is making alterations and plans are under way for reopening mill.

**Simmons Co.,** 230 Park Ave., New York, N. Y., has leased a two-story building in Fairfax Industrial District, Kansas City, Kan., for new mill. A one-story, L-shaped addition will be erected, 30x100 ft. and 90x90 ft. Cost over $60,000, with equipment.

**Proximity Mfg. Co.,** Greensboro, N. C., has taken out a permit for two new additions to mill, four- and one-story. The larger unit, to be used for general warehouse service, will cost about $50,000; the smaller structure will be equipped for extension in chemical division, and will cost $15,000.

**Phenix Mills Co.,** Kings Mountain, N. C., is consolidating and revamping its opening room, and converting its pickers into a one-process system. Borne Scrymser Co. is fitting the opening process with a single-assembly conditioning system.

**Superior Yarn Mills,** Monbo, N. C., has had its spinning overhauled by Walker Engineering Co., Inc., Gastonia, N. C.

**Erwin Cotton Mills Co.** has purchased a Guillet overhauling system from Dixie Spindle & Flyer Co., Charlotte, N. C., to be installed in the Erwin (N. C.) plant.

**Slater** (S. C.) **Mill** has installed 100 new Draper looms, not removed from the firm's Webster (Mass.) plant.

**Winnsboro** (S. C.) **Mills** is completing installation of a new Barber-Colman high-speed warper, several of which were installed about a year ago. Other improvements include a battery of Rockwood drives, a new roof on one plant, and several new houses in the village. Experiments toward better lighting are being made with high-intensity vapor lamps. Aluminum paint is being tried out in several places to combat condensation.

•

## *Cotton Financial Notes*

**Lowe Mfg. Co.,** Huntsville, Ala., cotton print cloths, with equipment including 28,672 spindles and 732 Draper looms has been purchased from Hunter Mfg. & Commission Co., by the Enderley Corp., New York, of which Edwin Farnham Greene is president. It is purposed eventually to restore the mill, which has been closed since 1932, to activity.

**Amoskeag Mfg. Co.,** Boston, Mass., held a court hearing on Jan. 20 in the matter of reorganization under Sect. 77B. Petition was made to transfer proceedings to court at Concord, N. H., and hearing on this will be held Feb. 10. The bondholders committee is drafting a reorganization plan.

**Hoosac River Corp.,** Adams, Mass., has been organized with capital of $50,000, to operate a local cotton mill. William C. Plunkett, Adams, is president and treasurer.

**S. Slater & Sons, Inc.,** East Webster, Mass.—Sale of machinery in this plant realized $60,613.

**Union Cotton Mfg. Co., Fall River, Mass.** —Former mill of this company has been purchased by Fall River Properties Corp., which will remodel and improve for leasing to various industries.

**Nashawena Mill** (New Bedford, Mass.) directors on approval of stockholders, plan to renew operations on a smaller scale. When the mill closed it had 194,700 spindles and 4,144 looms. Plans now proposed would call for operating 62,000 spindles and about 1,400 looms. William B. Gardner is president and the company produces plain and fancy cotton goods.

**Charles D. Thoms & Co.,** New York, and Red Springs, N. C., has filed to reorganize under Sect. 77B.

**Entwistle Mfg. Co.,** Rockingham, N. C., reports net profit for the year ended Sept. 30, 1935, of $789 compared with $95,848 in preceding year.

**Rhodes-Whitener Mills, Inc.,** Taylorsville, N. C., have been acquired by A. A. Whitener and family through purchase of all outstanding stock. Mr. Whitener will continue as president. Offices of the mill will be removed from Lincolnton, N. C., to Hickory, N. C.

**Clarence L. Meyers & Co.** has been established at 2nd & Somerset Sts., Philadelphia, Pa., as a partnership to manufacture and deal in yarns. Principals of the new concern are Clarence L. Meyers, Estelle S. Meyers, Milton M. Meyers and Gustave C. Ballenberg.

**Potter Fine Spinners, Inc.,** Pawtucket, R. I.—Machinery and equipment at mill of this company has been purchased by Crescent Machinery & Supply Co., Fall River, Mass., and will be sold in small lots to different interests. The plant suspended operations late in 1935.

TEXTILE WORLD'S

# Wool Digest

THAT the continued advance in wool prices is undesirable is the conviction of most manufacturers. The resulting high prices on fabrics tend to encourage the use of substitutes or to turn interest toward lighter, coarser fabrics. The automatic restraint which it places upon consumption is regrettable. Fortunately, this effect is bound to be counteracted somewhat by the general improvement in business with resulting increase in the income of the individual.

Piece goods sellers face difficult problems, it is true, but none so discouraging as those produced by the previous years of declining prices. In this rising market, two resolutions will help: (1) to continue to insist on a profit, no matter what the raw material does; and (2) to refuse to be stampeded into a runaway market with its inevitable reaction of grief.—*Editor.*

## *Price vs. Quality This Season*

The wool goods market seems well on its way this year to get at least a temporary answer to the old problem whether the public really prefers price or quality. It had seemed that wool was high enough in the last quarter of the old year and there were hopes in some quarters that prices had flattened off on a plane which might hold for many months. In January the up-trend recommenced and prices already set on such fall lines as had opened began to seem cheap and further advances were made with more in prospect. During early January there were rises of 5 to 10c. per yard.

A downward shift in weight of cloth and quality of wool will be necessary for such clothiers as hope to get out garments at their accustomed retail price ranges. Some of the chains will doubtless raise their prices somewhat, but it is doubtful whether a dollar or so would permit their holding to the fabric grades of yesteryear, when wool was cheaper and the temper of sellers less bouyant.

An expanded period for manipulated goods is unlikely to open this year, but if the movement continues, substitutes are bound to come, if not through consumer demand, then through the desire of weavers and cutters for greater margins.

•

## *Pre-Opening Business Is Reported*

Formal openings of men's fall suitings are on the threshold and advance business has already been taken behind the scenes in some houses. Influences now in sight will act to make these early prices probably the season's lowest, but of course something unexpected may arise to confound the prophets.

There has been some last minute filling in of men's wear for current needs and the women's wear trade is broadening for spring. The winter resort business in wool garments for both men and women is said to be the largest ever witnessed which at least aids enthusiasm for the forthcoming spring season

Mill activity for the first quarter is bound to be high since mills average a sold up condition to April 1. The nest egg of unfilled orders is estimated at 53,000,000 yd.

•

## *"Seven Wonders of Wool"*

Associated Wool Industries, New York, launched its new talking slide film production "Seven Wonders of Wool" on Jan. 13 at the fourth annual sales conference of employees of Wm. Filene's & Sons Co., Boston, where it was presented by F. B. Todd, merchandising director, Associated Wool Industries. On Jan. 14, it was shown at R. H. Macy & Co., New York.

The film is designed for retail sales personnel training. It is accompanied by a booklet which gives the film dialogue as well as a wide variety of tested selling phrases for use in the 17 departments of retail stores where wool is sold.

The Seven Wonders of Wool are that it is (1) by nature a body covering, (2) thermostatic, (3) absorbent and porous, (4) fire resistant, (5) elastic and resilient, (6) strong and durable, (7) light and soft.

•

## *Tops Up-and-Up*

After an indifferent though fairly steady December, the wool top market staged an upturn to new highs in January. December closed with spot tops of the exchange standard at $1.00; on Jan 3 price was $1.02½; on Jan. 17, $1.05; on Jan. 30, $1.11½ and the end is not yet say traders. Large domestic consumption is the background. On Friday Jan. 17 wool top futures reached the $1.00 mark for the first time since April, 1934. The month of May was the contract to make this record.

## *Wool Scarce at Present Consuming Rate*

Wool production in 24 countries in 1935 was 3% below 1934 says the Bureau of Agricultural Economics. Consumption in the United States goes on at a merry pace which has eliminated the surplus and brought a situation in which wool dealers believe that at least a six weeks' supply must be imported to maintain activity before the new domestic clip becomes available. Prices in January were markedly on the uptrend and the rise may go far enough to slow down consumption by encouraging substitutes. There were few American buyers in evidence at the recent London wool auctions but it is said that they were represented under cover in an effort not to bull the foreign market unduly against them.

•

## *Carpet Promotion Under Way*

The Institute of Carpet Manufacturers of America in conjunction with Byron G. Moon Co., have issued "Education Bulletin No. 1" on "The Merits of Wool Pile to Clothe the Floors of Your Home." The bulletin is well illustrated to dramatize the various points it stresses which include "wool is the only textile fiber that has a comfortable, friendly feel, no matter what the temperature may be;" "Wool fiber and pile construction guarantee foot-ease and floor comfort;" "they warmly and comfortably clothe cold floors;" "they are quieter for restful living, more silent for sound sleeping;" "floors and stairs properly clothed are safer."

The "Floor Clothing Wardrobe Service" has issued its first Merchandising Flash and is enrolling retail stores as recipients of the service. Already a number of leading stores are making ensemble displays using the special material distributed by the Service.

•

## *Wool Price Trend*

Key wool prices of Jan. 25 and a month ago, contrasted with the last two years:

| | Jan. 25 1936 | Jan. 2 1936 | Feb. 1 1935 | Feb. 1 1934 |
|---|---|---|---|---|
| Fine and fine med. territory | $0.82 | $0.78 | $0.72 | $0.82 |
| Ohio 3/8s | .41½ | .38½ | .28½ | .43 |
| Tops, fine, 64-60s | 1.12½ | 1.04 | .91 | 1.19 |
| Average 3/8s | .99 | .91 | .74 | 1.07½ |
| High 1/4 | .91 | .84 | .65 | .96 |
| Noils, fine | .70 | .66½ | .52 | .58 |
| 1/4 | .54 | .51 | .40 | .49½ |
| 2-40s 60s wstd yarn | 1.50 | 1.49 | 1.36 | 1.67½ |
| 8020 serge | 1.95 | 1.90 | .... | .... |

•

## *Wool Stocks Shrink 33% in Year*

The quarterly wool stock report, issued by Bureau of the Census as of Dec. 31, 1935, discloses the inroads of last year's record consumption on available supply. Total apparel-class wool available Dec. 31, 1935, was 113,337,000 lb. (scoured) against 169,999,000 lb. 12 months before. Manufacturers held 61,553,000 lb. against 48,969,000; dealers held 51,784,000 against 121,030,000. Total available apparel-class wool on Sept. 28, 1935, was 156,689,000 lb.

## *Wool Industry Briefs*

**"Top o' the Morning"** radio program over WINS, New York, on Jan. 15 featured a talk by John Black, assistant editor of TEXTILE WORLD on the subject "Are Men Fashion Conscious?" Mr. Black stressed the fact that men were becoming *wool* conscious what with lots of things besides suits and overcoats being attractively made of wool.

**Blanket openings** for the next fall season are in order for early February.

**O. J. Caron** and **C. M. Patterson**, both of Chicago, announce they have formed a partnership to be known as **Caron & Patterson.** They will represent in the Central West with headquarters at 222 West Adams Street, Chicago, Ill., the following spinners of worsted, woolen, merino, spun silk, rayon, mohair and novelty yarns: French Worsted Co., Woonsocket, R. I.; James Lees & Sons Co., Bridgeport, Pa.; Falls Yarn Mills, Woonsocket, R. I.; New England Spun Silk Corp., Brighton, Boston, Mass.; Ingram Mfg. Co., Nashville, Tenn.; Joseph Benn Corp., Greystone, R. I.; Caron Spinning Co., Rochelle, Ill.; A. M. Smyre Mfg. Co., Gastonia, N. C. The firm will continue the Caron line of dyed and natural rayon.

**Harding Carpets, Ltd.,** Brantford, Ontario, have issued a group of folders containing handsome color reproductions of patterns from each line. These lines include Melbourne wilton, Mayfair axminster, Douglas axminster, Oakwood smyrna, Scotia axminster, Dorak wilton, and Sherbrooke axminster.

**Army bids** on 70,908 yd. of 18 oz. O.D. serge, opened Jan. 3, ranged from $2.114 to $2.68. William Whitman Co. was the low bidder.

**Casein Wool**—Data regarding the synthetic wool produced in Italy from casein is published in the January *Textile Research.* Included is the chemical composition of this synthetic wool and natural wool. An editorial note states that "While the chemical components of this so-called 'synthetic wool' may be accurate, it will be necessary to await a scientific analysis of its physical characteristics before deciding whether it really merits the term 'synthetic wool.' Such tests as were possible with the small samples that were available indicate that it lacks several of the physical characteristics that differentiate wool from other natural fibers."

**Jules E. Beuret,** of Beuret & Co., selling agents, New York, has resigned to join the selling business of Allen L. Goldfine, New York, who is directing a group of wool goods mills. Mr. Beuret was also president of the Wakefield Textile Co., lately acquired by Mr. Goldfine.

## WOOL IN THIS ISSUE


| | page |
|---|---|
| Chemicals and Wool-Effect on Tensile Strength | 70 |
| Practical Aids for Woolen, Worsted Loomfixers | 71 |
| Worsted Grandrelles—Contrasting Yarns Plied | 76 |
| Permanganate-Ammonia Prints on Wool | 79 |
| Light Spots in Worsted Yarn | 95 |
| Single Pick Loom Made Automatic | 98 |


## *Wool Mill News*

**Somersville** (Conn.) **Mfg. Co.** is renovating and repairing the former Belding Bros. silk mills in Rockville, Conn. Plans for future use of the Rockville property have not been disclosed.

**Sterling Fiber Co.,** Waltham, Mass., has bought a plant in Chelsea, Mich., to use for manufacture of upholsteries.

**Simons Wool Stock Corp.,** 20 Broadway, Brooklyn, N. Y., will remove to three-story building at Roebling and N. Eighth Sts. Present facilities for sorting, grading, etc., of wool stock will be increased.

**Mohegan Woolen Co.,** Warrensburg, N. Y., has complete reconditioning of plant equipment.

**Waterloo** (N. Y.) **Mills,** recently acquired by Allen L. Goldfine, head of Narragansett Woolen Mills, Inc., Wakefield, R. I., has been purchased by Louis Bachmann, president, Uxbridge (Mass.) Worsted Co. and identified with a number of other woolen mills. New owner has resumed operations after reconditioning.

**Saybrooke Mfg. Co.,** Hope Valley, R. I., is considering early rebuilding of portion of mill recently destroyed by fire. Loss estimated at over $70,000.

**Cumberland Gap Woolen Mills,** Harriman, Tenn., has rebuilt its drying house recently destroyed by fire.

## *Wool Financial Notes*

**James J. Regan Mfg. Co.,** Rockville, Conn., is now operating under the direction of Allen L. Goldfine, who is in charge of selling through the Glenerry Woolen Co., which he owns.

**Arlington Mills,** Lawrence, Mass., report net earnings for year ended Nov. 30, 1935, of $574,077 compared with net loss of $420,757 for preceding year. Sales were $15,321,593 compared with $10,419,647.

**Hiram Leach,** Toronto, Ontario, has bought only the woolen mill interest of Toronto Shirt & Overall Co. He did **not** purchase any interest in the National Textile Co., as incorrectly reported in these columns last month.

**Chatham Mfg. Co.,** Winston-Salem, N. C., has bought the properties of Inverness Mills, near the city, with the expectation of eventually using the plant in the manufacture of Chatham Homespun. For the present, it will be used for storage.

**Lango Woolen Mills,** Corinna, Me., has been organized with capital of $25,000 by Frank H. Shapiro, Brighton, Mass., and associates, to operate a mill in this vicinity. Mr. Shapiro will be president and treasurer of new company. Others interested include Carl W. Otis, Corinna; and Warren K. Penley, Bangor, Me.

**Sanford** (Me.) **Mills** reports net profit for the year ended Nov. 30, 1935, of $1,343,516, against $352,703 for the previous year.

**A. & M. Karagheusian, Inc.,** Freehold, N. J., have suspended operations for an indefinite period owing to labor difficulties.

**Akron** (Ohio) **Woolen Co.,** in bankruptcy will pay creditors 50% in settlement at once, which was accepted by the creditors in lieu of payment in full under an extension plan.

**Byrne Mfg. Co.,** has been organized with headquarters at Walnut Lane and Cresson St., Manayunk, Pa., to engage in the spinning of woolen and merino yarns. D. M. Byrne, 6719 North 6th St., Philadelphia, heads the firm.

**Philippi** (W. Va.) **Woolen Mills, Inc.,** has been organized with capital of $100,000. incorporators: George T. Williams, of Rosemont, Pa.; Leo P. Caulfield and Oscar J. Andre, of Clarksburg, W. Va.

**Harding Carpets Ltd.,** Brantford, Ont., for the year ended Oct. 31, 1935, report net profits of $38,480.

**H. London & Co.,** Sumpter, S. C., was lately incorporated and is owned by Herman London, Donald B. Osborne and Wendell M. Levi. The report as given in this column last month was incorrect.

## COMPARATIVE GRADES OF WOOL

| UNITED STATES | | | | | | | | | FOREIGN | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Domestic Fleeces | TERRITORY | | PULLED WOOLS—EASTERN | | | | | | | | | | |
| | Territory Wools | Oregon Wools | April to May | May to August | August to November | | December to March | | Counts Universal | Cape, Australia and New Zealand | South America | Spinning Counts Worsted System | Spinning Runs Woolen System |
| | | | Clothing | Clothing | Clothing | Combing | Clothing | Combing | | | | | |
| Delaine | Fine | Eastern F & F Med. | | | | | AAA AA | AA | 70s 64s | Merino | Merino | 60s | 6/7 |
| Half Blood | Half Blood | Valley No. 1 | A Lambs | L B | L A | | A | | 60s | | Prima | 60s | 5 |
| | | | | | L B | | A Super L B | A B | 58s | Comeback | | | 4 |
| 3/8s Blood | 3/8s Blood | | B Lambs | B Super | | | | | 56s | Half Bred | Ones | 36/40s | 3½ |
| Quarter Blood | Quarter Blood | Valley No. 2 | | B Stain | | B Comb. | B | M | 50s 48s | Quarter Bred | Twos | 30s | 3 2½ |
| Low 1/4 Blood | Low 1/4 Blood | Valley No. 3 | C Lambs | C | | L | C | L | 46s | | Threes | 26s | 2 |
| Common Braid | Common and Braid | | | | | | | | 44s 40s 36s | Lincoln and Cottswold | Fours Fives Sixes | 16s | 1 3/4 |

*Courtesy Bavenson & Levering, Camden, N. J.—reproduced by permission from their manual "Wool Handling"*

TEXTILE WORLD'S

# *Rayon Digest*

THE annual statistics released by the *Rayon Organon* (as summarized on page 61) are more complete and more useful than ever. Each year improvement is made, with the result that an extremely valuable source of information on this particular branch of the textile industry has been established.

Incidentally, we cannot refrain from taking a bow for TEXTILE WORLD'S estimates of domestic and world rayon production in 1935 which we made last September, thanks to the cooperation of the great majority of rayon producers. With five months of the year still to go when we made our estimates, we predicted U. S. production of 250,000,000 lb. and world production of 959,580,000 lb.—which compare with the *Organon's* figures of 256,659,000 lb. and 950,000,000 lb., respectively.

No wonder we think the *Organon's* survey is pretty good!—*Editor.*

## *Will 150 Den. Rise? Market Is Skeptical*

Moderate demand for viscose rayon yarns at the new prices were reported by producers during January; however, the companies were so heavily sold at the time of the advance that most January shipments were at the old levels; it was evident that the higher prices would not become fully effective for some weeks.

The possibility of an advance in 150-40 denier price to equalize with the other yarns increased in December was a major topic of speculation in mid-January, but by the opening of the current month expectation of such a rise in the immediate future had been pretty well abandoned by the trade. Producers themselves pointed out that, while the finer deniers are sold well ahead, the 150-40s are in just moderately good position—not good enough, at all events, to warrant an increase at present.

•

## *Japan Staple Subsidy Stirs Interest Here*

Reports which reached the Department of Commerce last month from Tokio that the Japanese Government is subsidizing the rayon staple industry there, were received with much interest in the American market. While the development was viewed as having important bearing on the price of American wool or cotton textiles, it was not regarded as an immediate threat. From point of price, of course, Japanese staple is now selling at levels very disadvantageous to the American product, and the present 25% duty seems scarcely adequate. However, the quality of the Japanese staple remains so low as to keep it out of the more important markets for staple here.

It is recognized, however, that the relation between our staple and that of the Japanese is something to be closely watched; one thought expressed in the market is that the growing significance of Japanese staple as a competitor might be helpful to us if it spurred the American industry to find ways of lowering staple production costs.

•

## *Tubize-Celanese Accord*

Litigation between the Tubize Chatillon Corp. and the Celanese Corp. of America was terminated last month when it became known that Tubize had granted a license to Celanese to use the Singmaster patents. J. E. Bassill, president of Tubize, announced that under the new arrangement Celanese acquires rights to Singmaster and other delustering patents in Canada and England as well as in the United States. He added that "signing of this agreement by Celanese Corp. constitutes recognition of the validity of the Tubize patents involved in suits brought by Tubize against Celanese and thus terminates these suits."

•

## *Paris Is Fancy-Free In Newest Rayons*

Fabrics in which rayon is interwoven with cotton, ramie, or goat's hair, and sometimes in combination with two of these, are featured in the latest Paris showings, according to the Paris office of the duPont Style Service. Real originality in rayon fabrics are achieved through novel combinations this season, the dispatches emphasize, and there is more stress on rayon mixtures than in the all-synthetics. One novelty of the new season is a rayon net of horsehair appearance which has interweavings of slit cellulose film.

The newest rayon prints in Paris are likewise imaginative, the designs including castles, hunting scenes, cathedrals, ducks and new concepts of the cupid theme.

•

## *Water-Resist Rayon?*

Rayon executives expressed interest this month in dispatches from Europe to the effect that some firms there are concentrating their research on efforts to increase the wet strength of rayon and spun rayon. To achieve that result the fabric is given an impregnation bath, with the aim of converting it from an absorbent material to an impermeable one without adversely affecting appearance. The experiment is significant from the sales point of view in that, if successful, it would give rayon the valuable added advantage of being water-resistent. American rayon men who commented on this, pointed out the increasing call for water-resist textiles, adding that the extra cost for processing these fabrics at present is a considerable item.

•

## *On Again, Off Again!*

The hearings being conducted by the Federal Trade Commission into charges of violation of anti-trust laws by the viscose branch of the rayon industry which were once more postponed on Jan. 7. They had been resumed the day previous and only one day's testimony was taken. Observers at the hearing expressed the view that the F T C decided upon the indefinite postponement because the testimony to date has failed to prove the charges of anti-trust law violation. The postponement revived speculation as to possible discontinuance of the inquiry.

•

## *Foreign Flashes*

**French Exports Decline** — French rayon yarn exports showed a considerable decline during the first eight months of 1935, according to a report from Consul C. J. Pisar, Lyon, made public by the Department of Commerce. Pisar attributes the drop to quota restrictions and to blocked exchange accounts. Fabric exports also dropped, the 1935 figure for eight months being 15,210,000 francs, against 18,051,000 francs in 1934.

**British Output Off**—Rayon production in Great Britain in November, 1935, was 11,800,000 lb., considerably below the record figure of 12,520,000 lb. in October. However, the figure remains high, as comparisons with 1934 show. In November, 1934, output totaled 8,740,000 lb., while the eleven months' figure for 1934 was 85,240,000 lb., against 113,810,000 during the same period of 1935.

**Japanese Absorption**—Absorption by the Japan Soda Industry Co. (Nippon Soda Kogyo Kaisha) of the Fukui Rayon Spinning & Weaving Co. was made known in Yokohama recently.

The rayon firm, which was capitalized at 10,000,000 yen, was formed in July, 1934, but suffered financial difficulties later. The Japan soda firm had sought a rayon affiliate because of this industry's importance as an outlet for soda.

•

## *Industrial Announces New Yarn Process*

A new process for manufacture of rayon yarn has been developed by the Industrial Rayon Corp., and plans for commercial application of this method have been completed, according to an announcement Jan. 29, by Hiram S. Rivitz, president of the company. Mr. Rivitz made the announcement in a message which went to the stockholders with the firm's annual statement.

This process, which permits viscose yarn to be spun, desulphurized, bleached, washed, twisted, and wound in one continuous operation, is believed to be an outgrowth of the Furness process (T.W., Nov. 14, 1931). About a year ago Industrial acquired an interest in New Process Rayon Co. (successor to Furness Corp.), and at the same time received a license to use the Furness patents.

The firm will build a new plant at Cleveland having 8,000,000 lb. annual capacity, for manufacture of the yarn. Other salient points in the announcement are: the new process will reduce production costs; it is patented in 28 countries, these patents being held by a subsidiary of Industrial. Discussing the company's general production, Mr. Rivitz pointed out that, contrary to some belief, the firm does a considerable weaving yarn business, the weavers having bought 35% of Industrial's output last year.

Industrial's financial report for the year ended Dec. 31, 1935, showed a net profit of $608,012 against a profit in 1934 of $1,340,121. With respect to this reduction Mr. Rivitz pointed out that 1934 was marked by many "exceptional problems" chief among which was the 11 week strike which, the president estimated, cost the company $300,000, apart from loss of business.

•

## *Rayon Supplants Wool in Paris Offerings*

Rayon "will either be mixed with wool or will replace wool entirely" in the fabrics used for spring and summer *tailleurs*, according to a current cable from the Paris office of the DuPont Style Service. The message states that leading designers highlight wool-like rayon crepes and new rayon serges for these models.

•

## *Viscose to Double Acetate Production*

Plans for 100% increase in production of cellulose acetate yarn by the Viscose Co. at its Meadville, Pa., plant were made known last month. It was explained that the present power house has capacity for 20,000,000 lb. operation, while the present acetate unit when it reaches capacity next July will turn out only 10,000,000 lb. annually. The new unit therefore will not necessitate any added power house; work on the various other buildings required will begin shortly. The 20,000,000 lb. capacity will not be reached for a considerable time, however.

•

## *Rayon Price Trend*

Key rayon prices of Jan. 25 and a month ago, contrasted with those of the last two years follow:

| Viscose Process | Jan. 25 1936 | Jan. 2 1936 | Feb. 1935 | Feb. 1934 |
|---|---|---|---|---|
| 75 denier (18-30 fils) | $0.90 | $0.90 | $0.92 | $1.00 |
| 100 denier (40 fils) | .79 | .79 | .80 | .85 |
| 150 denier (40 fils) | .57 | .57 | .60 | .65 |
| Acetate Process | | | | |
| 150 denier | .60 | .60 | .68 | 1.00 |
| Cupra. Process | | | | |
| 150 denier (112 fils) | .65 | .65 | .70 | .90 |

•

## *Industry Briefs*

**Tubize Sells 400 Houses**—The sale to mill workers in Hopewell, Va., of 400 houses which have been owned by Tubize Chatillon Corp. ever since that firm first started nitro-cellulose yarn manufacture in 1922, began last month on a ten-year payment plan. The property ultimately will bring the firm nearly $300,000. The payment basis approximated average rental charges.

**Study Labor Agreement**—It was announced at Philadelphia last month by W. F. Kelly, vice-president of the United Textile Workers that the agreement which had been reached between his body and the Viscose Co. was now being studied by the union branches in the communities where the company has plants. Recognition of the union, and a 30-day advance notice of strikes are the chief provisions of the agreement.

**Wilcox to Sell Staple Fiber Top**—Wilcox & Co., of Boston, has been appointed selling agent for the new rayon top of staple fiber which has been placed on the market by Farr Alpaca Co. it is announced.

**New Men's Wear Item**—Possibilities for further use of rayon in men's wear are seen in a new line of knit rayon street and sport shirts for men which has been introduced by Doncaster Co. The fabric is made of duPont yarn and is said to have both the body and the dullness demanded for masculine apparel.

**How About a House-Warming?**—A new sales office for the American Enka Corp. is being opened at Greensboro, N. C. The office is in charge of R. J. Mebane, Southern sales manager, who continues to cover the Southeast and will operate from that point. Address: Room 1001, Jefferson Standard Bldg.

*Typical of the originality now going into knitted outerwear manufacture is this distinctive knitted cloaking or suiting fabric. It has a ribbed face of curled mohair, with Bemberg backing in contrasting shade. By French & Ward.*

•

## *Rayon Mill News*

**Edgewood Textile Mills, Inc.,** 128 W. Fifteenth St., Chicago Heights, Ill., have been formed with a capital of 250 shares no par value to operate a local mill on rayon and cotton specialties. Incorporators include H. H. Lord and C. B. Murton.

**Newmarket Mfg. Co.,** Lowell, Mass., has installed a H-W rayon conditioner.

**Malina Co. of N. J.,** Paterson, N. J., has purchased two H-W conditioners for setting twist on rayon.

**Eton Mills,** Shelby, N. C., has been placed in charge of J. R. Dover, Jr., and Earle A. Hamrick, president of the mills, as trustees, for reorganization. The mills make rayon crepes and cotton goods.

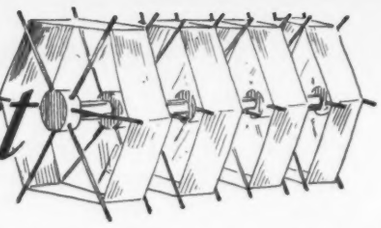
**DuPont Rayon Co.,** Ampthill, near Richmond, Va., are about to start the erection of a small addition which will give employment to about 125 men, and will be completed by early summer.

## RAYON IN THIS ISSUE


| | Page |
|---|---|
| Rayon's New High Record in U. S. and World Output | 61 |
| Humidity Requirements for Rayon and Acetate | 72 |
| Chart System for Rayon Weave Room | 82 |
| Knotting Crepe Warps | 94 |
| Single-Shuttle Ribbon Loom | 99 |

TEXTILE WORLD'S

# *Silk Digest*



THE newly-organized Raw Silk Importers, Inc., have a constructive function to perform. Composed of men with a single and jealous interest in this particular fiber, the group may be expected to work for improvement in trade practices in its sale and purchase.

Silk has not become a museum piece—as witness the very large consumption in hosiery and the use in many woven fabrics. Nevertheless, on a poundage comparison, it resembles a poor relation of rayon. Consequently, it is all the more logical that its progress as a raw material should be in the hands of men who have an unalloyed stake in that progress.—*Editor.*

## *Silk Recaptures Most of Month's Losses*

The first weeks of the new year brought sharp fluctutaions to the raw silk market; however, most of the losses were retrieved, with the result that prices in the latter part of January were not more than 3-4c. below those of late December. The market status generally was confused; on one side there was a shortage of some 20-22s and weavers found difficulty in getting early shipment; on the other hand, the middle of January brought reports that the current crop would not be so small as first believed. Thus with favorable and adverse influences fairly well balanced, prices were prevented from registering any radical change for more than a day or so.

Importers were disappointed that the hosiery manufacturers had not shown their anticipated interest this month; orders from these mills were meager for the most part. On the other hand, since raw silk stocks in hosiery knitters' hands are known to be small, it was felt that they could not defer coverage very long.

•

## *Strike Issue Upsets Broadsilk Outlook*

Broadsilk manufacturers entered February in rather uncertain mood, due to a confused market outlook. The threatening labor situation in the dress trade acted as a brake on sales throughout the better part of January, and mill men did not look for much improvement in fabric turnover until the strike issue was eliminated. With respect to the broader phases of the strike crisis they were inclined to be philosophical; some mills already began curtailing production in January, fearing a prolonged dress trade tie-up, and manufacturers pointed out that this was helping reduce market surplus. On this point, it was emphasized that, if curtailment continued and the threatened strike proved of short duration, the result might be beneficial rather than harmful to the market as a whole.

With respect to prints generally, goods were not plentiful at the low end and prices of the best-selling lines were firm to upward; the prices of quality prints, however, had weakened. The prices of plains were on the soft side, with some manufacturers offering concessions to prevent strike accumulations.

•

## *Japan's Holiday Calendar Compiled*

With the aim of clarifying the understanding of American raw silk buyers regarding holidays in the Japanese market, the Japanese Government Raw Silk Intelligence Bureau, New York, has compiled the following list of national holidays for the calendar year. (These holidays are supplemented by various local observances.)

JAN. 1 to 5—Genshisai: Japanese New Year celebrations.

FEB. 11—Kigensetsu: National—anniversary of the coronation of the first Emperor of Japan (Emperor Jimmu).

MAR. 21—Shunki Koreisai: Religious and national—spring anniversary for imperial ancestors.

APR. 3—Jimmu Tennosai: National—memorial anniversary of death of Emperor Jimmu.

APR. 29—Tenchosetsu: National—the present Emperor's birthday.

SEPT. 24—Shiki Koreisai: Religious—autumn anniversary for imperial ancestors.

OCT. 27—Kannamesai: Religious and national—celebration for gods.

NOV. 3—Meijisetsu: National memorial day for Emperor Meiji.

NOV. 23—Niinamesai: Religious and national—Japanese Thanksgiving for new crops.

DEC. 25—Taishotennosai: Memorial for late Emperor Taisho.

•

## *Japan Foresees Shortage*

A marked scarcity of dry cocoons existed in all Japanese districts at the end of the year, according to an investigation made by a Yokohama merchant and reported by the Commodity Exchange, New York, last month. The report stated that the quality of dry cocoons needed for production of raw silk for export were especially scarce and had served to stimulate prices in the interior. The inflated levels carried the cocoons out of reach of small reelers, which is making for a longer winter suspension than usual. This in turn would mean a sharp decline in raw silk stocks to reach Yokohama and Kobe for export, it was stated.

•

## *Changes at Blumenthal's*

Important executive changes were announced last month by Sidney Blumenthal & Co., through H. H. Schell, president. Duncan Ferguson, who has been with the company for some years and has had wide experience both in manufacturing and dyeing and finishing of textiles, has been appointed manager of manufacture, succeeding A. G. Holland, resigned. Mr. Ferguson assumes charge of all manufacturing activities of the firm in all plants. E. H. Suessmuth, Jr., has been appointed assistant manager of manufacture. F. W. Stolzenberg has been placed in charge of all fabric development.

•

## *Plan to Grow Silk in Michigan*

Plans for active production of silk in Michigan were announced in Detroit, last month, by the newly formed Silk Agricultural Industries, Inc. The company, capitalized at $100,000, will buy mulberry trees in Europe distribute them to Michigan farmers at minimum cost; a non-profit organization, the Silk Agricultural Association will be formed, as part of the program. The first-named body will culture silk worm eggs scientifically and distribute them to the association memership which will be comprised of silk growers.

•

## *Summer Velvets Favored*

Early plans of the dress trade and the retailers point to increased interest in summer velvets this year, according to a statement from the Velvet Guild. The statement adds that the current emphasis on summer velvets by Lyons and other French centers has communicated itself to the American trade to a moderate degree and promises to become increasingly apparent later. One important asset to promotion of summer velvets is the new crush-resist feature which enhances the durability of fabric appearance and thus lowers cleaning cost of summer wearers.

•

## *Federation Re-elects*

At the annual members' meeting of the National Federation of Textiles, Inc., held last month at the New York offices, the following directors were elected for the year: G. H. Conze, Susquehanna Silk Mills; B. Edmund David, David Silks, Inc.; Otto Froelicher, The Schwarzenbach Huber Co.; C. D. Jencks, Hamlet Textile Co.; E. C. Rossmassler,

Sauquoit Silk Mfg. Co.; Henry Stehli, Stehli Silk Corp.; W. Stunzi, Stunzi Sons Silk Co., Inc.; W. Robert Blum, United Piece Dye Works; Jarvin Cromwell, William Iselin & Co., Inc.; William Menke, Menke, Kaufmann & Co., Inc., and Samuel Bertcher, Edmund Wright Ginsberg Corp., representing the Uptown Credit Group.

•

## *Industry Briefs*

Black **Velvet Table Cloth**—The current question in the velvet market is: Will American women follow the style set at a recent formal luncheon at Dorchester House, London, where the table was set with crystal on a black velvet table cloth? The use of the velvet gave a dramatic aspect to the table setting, dispatches state.

New **Japanese Movie Shown**—The latest methods employed in Japanese silk growing were portrayed in a motion picture taken in Japan by George Schautz, Jr., and shown last month at a dinner party at the Nippon Club, New York.

**Many Exhibits of Prize Prints**—Displays in various cities of the silk prints which won the International Silk Guild-American Federation of Arts contest, continued through January, and the indications were the fabrics would be actively booked until March 1 when the display ends. The prints are being shown in leading stores in most of the principle cities from coast-to-coast.

•

## *Silk Price Trend*

Key silk prices of Jan. 25 and a month ago as contrasted with those of the last two years follow:

| | Jan. 25 1936 | Jan. 2 1936 | Feb. 1 1935 | Feb. 1 1934 |
|---|---|---|---|---|
| Crack XX 13/15 white 78%..... | $1.90 | $2.04½ | $1.42½ | $1.58 |
| Tram, 5thd Japan 85% | 2.62 | 2.65 | 2.27½ | 2.45 |
| Tram Crack XX 78%. | 2.49 | 2.57 | 2.02½ | 2.27½ |
| 60s-2, spun silk..... | 2.97½ | 2.95 | 2.95 | 2.95 |

## SILK IN THIS ISSUE


| | page |
|---|---|
| Silk Travelers Association Has 20th Anniversary.... | 79 |
| Chart System for Silk Weave Room..... | 82 |
| Finisher Gets More Steam with Automatic Stoker.... | 77 |
| Knotting Crepe Warps ..... | 94 |
| Deposit on Soaked Silk ..... | 94 |
| Difference in Stitch ..... | 95 |
| Single-Shuttle Ribbon Loom ..... | 99 |


## *Silk Mill News*

**Shelton** (Conn.) **Looms** have acquired the property of the Whitcomb Metallic Bedstead Co., adding 55,000 sq.ft. of floor space and 210 ft. of frontage on Canal St. to its property.

**Rossie Velvet Co.,** Willimantic, Conn., which resumed operations at the South St. plant recently after being shut down three years, is planning to take on 100 operatives to meet an increased demand.

**Katterman - Mitchell Co.,** Paterson, N. J., operator of the Ballard Silk Mill at Binghamton, N. Y., has acquired the old Ballard mill at 37 Milford St., Binghamton.

**Novelty Shawl Co.,** Paterson, N. J., has moved to new and larger quarters at 196 W. Railway Ave.

**Century Ribbon Mills, Inc.,** New York, N. Y., have negotiations under way with Chamber of Commerce, Suffolk, Va., for establishment of new mill there. City proposes to construct a one-story building for plant, to be occupied by company under long-time lease.

**Onondaga Silk Mill,** Ogdensburg, N. Y., has been leased to New York City silk interest, which plan to operate 130 looms.

**Brown Silk Mill,** Oswego, N. Y., which recently removed plant to former mill of Oswego Yarn Mills, is running on two-shift basis.

**Hanover** (Pa.) **Broad Silk Works, Inc.,** has plans maturing for new mill at Victoria, Va., where tract of land has been selected. Initial unit will be one-story and will be supplemented by several similar mill buildings following completion, developing a five-unit plant, designed to give employment to about 300 operatives. It is understood that company will remove considerable equipment from Hanover to new location. Cost over $75,000.

**Duplan Silk Corp.,** Marietta, Pa., has closed its local mill and is removing equipment. A large part of the machinery will be shipped to Vera Cruz, Mexico, where it will be set up.

**Williamsport** (Pa.) **Silk Co.** has approved plans for expansion, including installation of about 150 new looms and accessory equipment. Cost over $60,000.

**Blue Ridge Textile Mills,** Pulaski, Va., recently organized by Charles Van Houston and associates, have let general contract to Trinkle & Dobyns, Dublin, Va., for new one-story, 88x120 ft. mill on Pierce Ave., where tract of land has been acquired, plant to be equipped for manufacture of broad silks. Award for structural steel framing has been placed with Bristol (Va.) Steel & Iron Works, Inc., and for electrical work to Pulaski (Va.) Electric Co. Cost over $40,000, with equipment. It is proposed to build additional one-story units at later date.

**Canadian Silk Products, Ltd.,** Sherbrooke, Quebec, has installed one H-W conditioner for setting twist.

•

## *Silk Financial Notes*

**Chaminade Velours, Inc.,** Seymour, Conn., recently organized with capital of $50,000, plans operation of local mill. New company is headed by Percy D. Chamberlain, 8 Third Ave., and David H. Powers, 7 Broad St., both Seymour.

**New Albany, Miss.**—Chamber of Commerce has negotiations under way with a silk manufacturing company, for the establishment of a local mill. Municipality will erect a suitable building and lease to company.

**Baer Silk Co.,** Berwick, Pa., idle for the last four months because of a wage controversy, resumed operations Jan. 14. The management announced that operations were resumed after a petition signed by 70% of the employes expressed desire to deal directly with the company in disputes.

**Teson Silk Mills, Inc.,** Riverside, Northumberland County, Pa., ended a 30-day strike with all employes returning to work at wages prevailing before a reduction which caused a disagreement and walkout, according to Joseph G. Wolfe, owner.

**Berizzi Brothers Co. Inc.,** Erwin, Tenn., real estate, machinery and equipment were sold at public auction Jan. 14.

**Pulaski, Tenn.**—Industrial Department, Chamber of Commerce, is at head of a project to establish a local silk mill.

## Dirt from the Loom

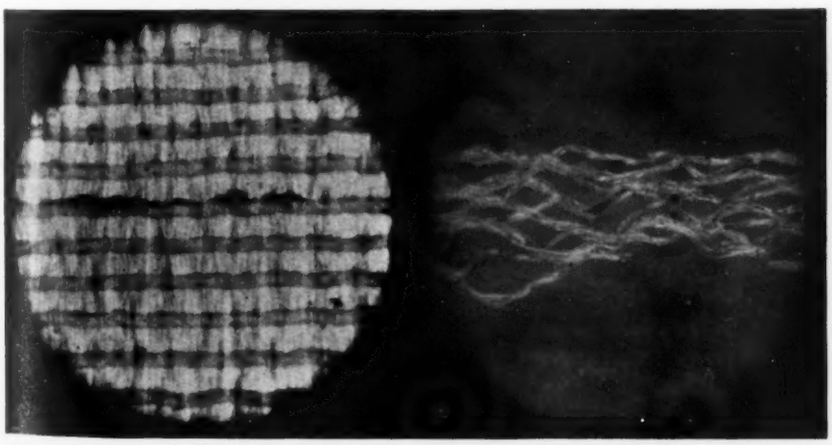


**Fig. 1** **Fig. 2**

*WHEN DIRT appears in a fabric, it is important to determine where it originated, in order that the cause of such trouble may be avoided in the future. The first photomicrograph, Fig. 1, shows an instance, not uncommon, in which the dirt is packed along one side of a filling thread in grege goods. It is evident that this condition was caused by dirt dropping out of the reed into the shed while the loom was in motion. The dirt is packed into the weave and will not come out in the subsequent boil-off.*

*Removing the dirty thread from the grege fabric and untwisting it, as shown in Fig. 2, indicates that the beat-up has forced some of the dirt into the thread itself and gives further evidence of the nature of this mill defect.*

*These photomicrographs, which are copyrighted by Hatch & Reutlinger, New York, show definitely that filling was not soiled previous to weaving, as might have been supposed.*

TEXTILE WORLD'S

# Knit Goods Digest

THE matter of frequency is a most important consideration in connection with expositions. Some seem to be inherently annual affairs; others prosper best as biennial functions. Experimentation seems to be the only method for determining into which class a particular show belongs.

The management of the Knitwear Industrial Exposition has so experimented, and has concluded that every other year is the proper frequency. Launched bravely during the depths of the depression, this show was staged successfully for three successive years. After a breathing-spell this year, it should reappear bigger and better in 1937.—*Editor.*

## *Hosiery Price Rise Exaggerated*

January was a month of price revision in the hosiery industry, and the end of the month found the market fairly stable with moderate spring business being placed. The upward trend of mill-to-jobber prices on women's full-fashioned was less pronounced than had been expected. The largest manufacturer in the industry made belated announcement of spring levels in mid-January and a study of this firm's lists showed that prices changed little from those of fall. Instead of the expected $6.25 for the 4-thread, 42-gauge ringless, this line was priced at $6.00. Beginning with a minimum of $5.75 on standard numbers the prices held fairly steadily to the levels of last fall.

Other manufacturers of popular-priced lines showed similar conservatism as regards raising prices. The new tendency away from increases is ascribed to the halt in raw silk's rise and the possibility of a down trend in the primary market. In the high quality field, however, hosiery prices rose decisively; one manufacturer of ingrains advanced certain numbers in that line as much as $2.00 per doz.

In contrast to the firm-to-upward tone at the silk end, a few knitters of cotton hosiery announced price cuts reflecting the abandonment of the processing tax. However, the Seamless Hosiery Manufacturers Association on Jan. 8 adopted a resolution stating that there would be no reduction in hosiery prices.

•

## *Defer "Ringless" Trial*

The merry game of postponing the "ringless" hosiery trial, long on the calendar of the U. S. District Court, Philadelphia, continued last month and the trial was put over again, this time until May 18. The reason given was that attorneys for the litigants were engaged in another case and would not be free on Jan. 18, which was the day set. Trade leaders specializing in three-carrier lines—and that includes most of the womens full-fashioned group—were frankly disappointed at the new deferment of the case. The uncertainty surrounding the status of all parties who manufacture or distribute this important line of hosiery has dulled market interest and tends to slow up an otherwise good demand, it was pointed out. The most regrettable phase, of course, is that the postponement carries with it delay of numerous related suits and countersuits in this protracted controversy.

•

## *Caution Is Keynote On Tax Situation*

"Be cautious on commitments as regards rebates" and "hold the status quo on prices"—these are the chief messages sent to knitters by their trade associations following dissolution of AAA by the Supreme Court last month. Final policies with respect to the new situation had not been shaped by any branch at time of going to press, the general desire being to wait developments. Manufacturers of hosiery, underwear and outerwear followed the counsel of their leaders and adopted a watchful waiting attitude; this was considered very important in view of the possibility of a new tax.

The key point emphasized by the National Association of Hosiery Manufacturers was that members should take no steps toward making refunds to their customers until they receive credits or adjustments from spinners. Substantially similar was the recommendation of the Underwear Institute; following the advice of the Institute underwear manufacturers who specialized in cotton goods inventoried their stocks and sales position as of Jan. 6, the day of the court decision. Roy A. Cheney, for the Underwear Institute, pointed out that even if mills were permitted to sue the Government for refund of tax the outcome might be surrounded with so much red tape as to make recovery impossible.

Outerwear manufacturers were less generally affected than their fellow knitters, due no doubt to the fact that the second half of 1935 had brought a decided drop in output of cotton knit outerwear; this drop was being due to the processing tax uncertainty. With that issue eliminated the outerwear mills now look for increased activity and a better business generally in cotton merchandise.

•

## *Exhibition Interest Keen*

Reservations for space at the Knitting Arts Exhibition to be held April 20 to 24, inclusive, at Commercial Museum, Philadelphia, are coming in rapidly, it was stated at the end of January. Officials of the National Association of Hosiery Manufacturers and the Underwear Institute, under the joint auspices of which the exhibition is being held, said the manufacturers were showing more interest in the event this year than any year since pre-depression times.

•

## *Outerwear Convention*

Tentative plans for the 18th annual convention of the National Knitted Outerwear Association, as announced Jan. 16, follow: The convention will be held Feb. 27, at the Hotel Astor, New York City, with, first, a morning meeting of the board of directors; second, a luncheon for all members, at which the Eastern District will play host; third, a general afternoon session, which will consider industry problems; and fourth, the annual banquet in the evening. Officials stated that the tentative plans were announced simply as a guide for manufacturers in planning the February schedules.

•

## *Green Stockings on Spring List!*

Further evidence that hosiery colors are making a determined break away from their standard range of limited colors reached the market last month when the spring card was distributed by the Textile Color Card Association. The significant feature of this card is the "Club Colors" group which embraces navy, wine and green shades. All these are decidedly more lively than any hosiery colors yet shown in the new "hosiery color rebellion" movement. The green and wine contribute a new novelty to women's hosiery; manufacturers are withholding opinion on them pending the first buyer and consumer reaction.

•

## *Industry Briefs*

**Something New in Picketing**—Whatever else may be said about the picketing methods of the American Federation of Hosiery Workers, they certainly are not lacking in originality. When a court order prevented picketing on the highway outside a mill of the Garden State Hosiery Co., Midland Park, N. J., recently, the labor union purchased a 50x100 empty plot opposite the mill, thus gaining the right to picket on their own grounds.

**New Home for Westminster**—The New York offices of Westminster, Ltd.,

have been moved from 232 Madison Ave. to the Empire State Building, where they adjoin the sales headquarters of Nolde & Horst Sales Co.

**Zillman Goes to Milwaukee**—Fred C. Zillman, for four years sales promotion manager at the New York office of Phoenix Hosiery Co. has taken charge of advertising and promotion with headquarters at the firm's Milwaukee plant.

**Approve Biennial Idea**—Pointing out that a yearly show which costs some firms as much as $1,000 is too big a burden for a moderate-sized industry, outerwear manufacturers have strongly endorsed the plan of the National Knitted Outerwear Association to hold the Knitwear Industrial Exposition every second year beginning with 1937.

**Can't Use "Custom-Made"**—The Federal Trade Commission announced Jan. 18 that a leading hosiery manufacturing company had agreed not to use the phrase "custom-made" in advertising hosiery or other products which are not actually made to the customer's measure.

**Import of knitted outerwear** from Japan increased more than 300% in 1935 over 1934, according to preliminary estimates compiled by the National Knitted Outerwear Association. A statement issued by the association last month asserted that inclusion of December in the total may bring the increase to 400%; however, the final total remains moderate, as the knitted outerwear imports from Japan in 1935 are expected to aggregate only $175,000 value.

•

## *Knitting Mill News*

**Lakeland, Fla.**—Negotiations are said to be under way toward establishing a hosiery mill to employ from 100 to 200 workers.

**Murray** (Ky.) **Hosiery Mills** have been organized with capital of $25,000, by interests identified with **Paducah** (Ky.) **Hosiery Mills,** headed by Louis Rubel, president. New company will take over branch mill of last noted organization at Murray, heretofore known as Mill No. 4. Plans are reported under way for expansion, including new one-story addition, about 60x150 ft. Bernard L. Lichten and George Hart are other incorporators of new company.

**Paducah** (Ky.) **Hosiery Co.** was destroyed by fire recently at a loss of $60,000. Louis Rubel, president, said the fire ruined machinery which it had been planned to move shortly to Murray, Ky.

**Hayward Hosiery Co.,** Ipswich, Mass., has installed one H-W conditioner for setting twist.

**Mid-West Hosiery Co.,** Omaha, Neb., has leased space in building at 6611 Euclid Ave., Cleveland, Ohio, and will occupy at early date for new branch plant. O. C. Throgerson is president and general manager.

**E. Z. Waist Mill,** Cambridge, N. Y., has been leased to the Worth Undergarment Co., New York, which has taken possession.

**Veitel Silk Hosiery Co.,** recently organized by Frank W. Veitel, of Hornell, N. Y., formerly with Merrill Hosiery Co. in that city, has acquired a two-story plant in West Main St., LeRoy, N. Y., which is to be remodeled and equipped for the manufacture of silk hosiery; operations to start about March 1.

**Anathan & Co.,** 512 Seventh Ave., New York, N. Y., has leased space in building at 51-12 21st St., Long Island City, and will remove present knitting equipment to new location.

**Trojan Maid, Inc.,** Troy, N. Y., has enlarged facilities for making knitted garments and dresses.

**Brown Knitting Co.,** Warsaw, N. Y., has active work under way on removal of equipment from its Volunteer Mill, Chattanooga, Tenn., to Warsaw, where it will be installed in building, lately purchased.

**Grenaco Knitting Mill,** Everett's Lake, near Rockingham, N. C., recently organized by John Everett, Jr., and associates, has begun operations for manufacture of men's half hose, and will expand production at early date, operating about 50 knitting machines.

**Guilford Hosiery Mill,** High Point, N. C., is erecting a two-story addition and will install 30 new knitting machines.

**Bogle-Watkins, Inc.,** Greensboro, N. C., which began manufacturing men's half hose about a year ago, has just completed installation of 60 new machines, which increases production by one-third. Present capacity is 1,500 doz. pairs per day.

**Concord** (N. C.) **Knitting Co.** plans to double its output within a year, operating at present about 180 circular knitting machines. A two-story brick-and-steel addition will be erected to take care of the expansion.

**Thomas W. Buck Hosiery Co.,** Philadelphia, Pa., is planning early removal of knitting mill to a site now being selected in the South. It is expected to make the change early in the spring. Capacity will be increased at new location.

**Joseph Harron,** Philadelphia, has begun production of high-twist crepe hosiery at B and Courtland Sts. The former Harron Hosiery Mills, of which he was general manager, was acquired by Cooper, Wells & Co. and the machinery distributed to that firm's plants.

**Rosslyn Hosiery Mills Corp.,** Philadelphia, has bought the machinery and leased the building of the Propper-McCallum Hosiery Co. in Philadelphia.

**Bell Knitting Co.** has removed its plant from Lebanon, Pa., to Sayre, Pa. Sanford Kay, general manager, said 300 workers will be employed by Sept. 1 and 1000 or more by Jan 1.

## KNIT GOODS IN THIS ISSUE


| | page |
|---|---|
| Is the Stocking a First? F.F. Hosiery Standards.... | 60 |
| Split-Foot F.F., Lately Sidetracked, Is Returning.... | 74 |
| Knitters Seek Novelties to Hold Swim Suit Market.. | 86 |
| Difference in Stitch ..... | 95 |
| Defect in Milanese ..... | 95 |
| Underwear Elastic Web ..... | 95 |
| Sinker-Cam Adjustment ..... | 95 |
| High Speed Warp Knitting Machine..... | 99 |
| New Pattern Control Device..... | 99 |


## *Knit Financial Notes*

**Camden, Ark.** — Industrial Committee, Chamber of Commerce, is said to be concluding arrangements with a manufacturer of knit goods, to establish and operate a local hosiery mill. A building to cost about $20,000, exclusive of equipment, will be constructed by city and leased to company.

**Benton, Ky.**—The building formerly the Benton branch of the **Paducah Hosiery Mills** has been bought by a group of local men who have negotiated a contract with a silk hosiery firm to occupy the building.

**Everett-Norfolk Co.,** Lebanon, N. H.—At recent public auction of mill property of this company by Mechanics National Bank, Concord, N. H., purchase was made by William Iselin & Co., Inc., New York, factors, for a consideration of $35,000. Sale includes all buildings and machinery. Plant has been idle for a number of years.

**County Sportwear Mills, Inc.,** Brooklyn, N. Y., have been chartered with capital of 200 shares, no par value, to manufacture knit goods. Company will take over and operate organization of same name with mill at 127 Seigel St. Incorporators include Irving Krantz, 1521 Eleventh Ave., and Louis Scher, 1511 Ocean Parkway, both Brooklyn.

**Plymouth Mills, Inc.,** 93 Wyckoff Ave., Brooklyn, N. Y., have filed notice of change of name to the **Nassau Knitting Mills, Inc.**

**Jackson Knitting Mills, Inc.,** Brooklyn, N. Y., have been formed with capital of 100 shares, no par value, to operate a local knitting mill. Principal incorporators of new company are Jack Green, 1830 Fifty-eighth St., and David Yelin, 672 Empire Blvd., both Brooklyn.

**Meriden Knitting Mills, Inc.,** Brooklyn, N. Y., have been chartered with capital of 100 shares, no par value, to manufacture knit goods. A local mill will be operated. Incorporators include D. Theodore Ostrow and Nathaniel H. Mandelker, both 261 Broadway, New York.

**Parkway Hosiery Mills, Inc.,** Asheville, N. C., recently organized, plan operation of local knitting mill. W. Y. Frazier, Arcade Building, Asheville, is principal incorporator and company representative.

**Lincoln Knitting Mills,** Lincolnton, N. C., has been incorporated by F. C. Nicholson, F. H. Chamberlain and C. B. Chamberlain, all of Lincolnton. Authorized capital stock is $50,000.

**Blackstone Hosiery Mills, Inc.,** Valdese, N. C., recently chartered with capital of $100,000, will take over and succeed to company of same name. Incorporators of new company include Henry Grill, Valdese; and P. D. Hutchinson, Charlotte, N. C.

**Hudson Underwear Co.,** Ephrata, Pa. capitalized at $100,000, have been incorporated for the manufacture of underwear. Officers are M. E. Pierson, P. Seifart and E. A. Lewis.

**Ajax Hosiery Mills** has sold at auction on Jan. 30 its Pottstown, Pa., plant, which is actually located at Stowe, just outside of Pottstown. Real estate and 24 45 gauge, full-fashioned hosiery machines with 3-carrier attachments. This plant is being sold because of concentration of the Ajax business at other locations. Saml. T. Freeman & Co. were the auctioneers.

**Pannill Knitting Co., Martinsville,** Va., made a profit last year of about $40,000, it was revealed to stockholders at their annual meeting. Dividends totaling 12% were paid. W. L. Pannill was re-elected president, with E. A. Sale elected vice-president, succeeding J. C. Shockley, Jr., who resigned.

TEXTILE WORLD'S

# Processing Digest

ONE of the most important advances in the marketing of textile chemicals and allied products is the increasing extent to which the manufacturers of those specialties are contributing to progress in textile processing. Many of these companies support research departments of their own and also help finance the work of textile research organizations.

An excellent case-study can be found in the Sulphonated Oil Manufacturers Association which has fostered fair trade practices, standardization of grades, etc., and has appointed committees to study such problems as laboratory procedure, costing, quality and standards, publicity, and marketing.

The most recent contribution of the association—publication of the official methods of analysis of sulphonated oils in the handbook mentioned elsewhere on this page—is valuable not only in itself, but as visible proof of the new and better relationships between manufacturers and users of textile chemicals.—*Editor.*

## *Cotton Finishers Add Surcharge*

Despite some opposition on the part of converters to the 1½% surcharge on finishing bills recommended by the National Association of Finishers of Textile Fabrics, there was every indication at the end of January that the finishers would be successful in their attempt to collect this extra charge. Earlier in the month at a meeting of the finishers' association, it was announced that 84 job finishers had notified their customers that the surcharge would be made. This action, according to the finishers, is necessary to meet the increased costs of labor, materials, clerical service, and supervision resulting from the operation of new Federal and State laws and regulations.

•

## *Yarn-Stiffness Measurement*

An instrument which measures quantitatively the stiffness of treated and untreated yarns, and which is especially valuable for determining the effect upon yarns of various size mixtures, has been developed by Dr. Irving J. Saxl and is described in the January, *Textile Research.* The method consists essentially in determining the force necessary to bend a piece of yarn, held at one end, through various angles. For convenience in the application of the force, the yarn is formed into a U-bend, the load being applied at the center of the U. The bending angle is variable by means of a turning device. The instrument is used in conjunction with an analytical balance. The method described lends itself to a great many different applications. Among others, the modulus of elasticity and the load-versus-deflection characteristics for various types of yarn have been determined. The influence of the number of filaments and proper sizing upon the stiffness is shown, as is the hysteresis effect.

The accompanying diagram illustrates the working principle of the apparatus.

On a pivot, 1, is attached a rotatable horizontal rod, 2. This rod has a pointer, 3, on its front end which plays over a graduated scale, 4. At the other end of the horizontal rod there is a clamp, 5, which holds a loop of yarn, 6, in such a manner that the origin of said

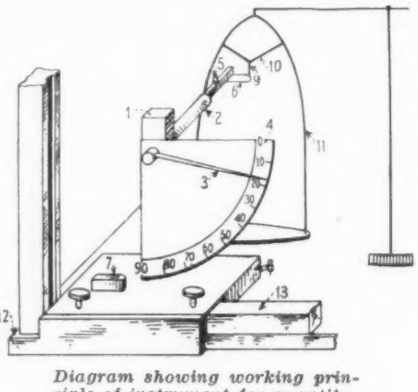



*Diagram showing working principle of instrument for quantitative measurement of yarn-stiffness which is particularly adapted for determining effects of various size mixtures*

loop coincides with the axis of the horizontal rod. The form for the loop is a small jig, 7, which is inserted between the loop and the clamp, 5, around which the loop is drawn while the yarn is tightly clamped. This jig, 7, is shown lying on the base plate, 8. After the loop is formed, the jig is removed. The loop, 6, is inserted in the fine wire hook, 9. This hook is held by a V-formed suspension, 10, which fits upon the frame of the bow pan, 11, of a sensitive, analytical balance. By turning the horizontal rod, 2, in a clockwise direction, the loop is pressed against the hook. By placing the rider of the balance properly, the force can be measured that is necessary to bring the balance (and thus the yarn) back to zero position.

For securing the same position of the stiffness tester, its base is held in position in the balance chamber by the L piece, 12, which fits outside around the scale cabinet. Inasmuch as the base plate, 8, interferes with the closing of the front cover of the balance, the block, 13, is inserted to eliminate any draft from the interior of the scale cabinet. In this manner, the front cover of the scale closes tightly and the weighings can be carried on in the customary manner. By determining the proper weight necessary to have the scale read zero for different angles of deflection, the load-versus-deflection characteristics of a yarn can be determined.

•

## *Data Book Issued on Sulphonated Oils*

To fill a long-standing need, the Sulphonated Oil Manufacturers Association, 55 West 42nd St., New York, has recently issued the initial installment of a handbook which includes the official methods of analysis of sulphonated oils adopted by the association. Use of these standard methods by manufacturers and consumers of sulphonated oils should eliminate the unfortunate misunderstandings which have occurred in the past, due to the use of different analytical procedures. The handbook is in loose-leaf form, so that supplementary data sheets can be inserted as they are issued. Copies of the book can be obtained from the association or from individual members.

The methods adopted by the association are those recommended by the American Association of Textile Chemists & Colorists, and include the following determinations: (1) moisture, (2) inorganic salts, (3) total alkalinity, (4) organically combined sulphuric anhydride—titration method, (5) organically combined sulphuric anhydride—extraction-titration method, (6) total fatty matter, (7) total sulphated fatty matter, (8) unsaponifiable matter, and (9) free fatty acids.

•

## *Non-Oxidizing Finishing Oils*

Phosphamized finishing oils, a new series of non-oxidizing compounds developed to prevent rancidity, odors, and discoloration of finished goods on the shelf or in storage, have been announced recently by Onyx Oil & Chemical Co., Jersey City, N. J. Phosphamizing is an additional process applied in the manufacture of the regular Onyx finishing oils—on specification and at a slight additional cost. In the Oleo Glyceryl Sulphate types of oils developed some

time ago by this company, the likelihood of oxidation was reduced by the maintenance of a low free fatty acid content and a concurrent increase in true sulpho glycerides. Phosphamizing is a further step in preventing the formation of fatty acids and oxidation products, which is accomplished by subjecting the sulphonated oils to the double reaction of phosphation and aminizing. One reaction is for the purpose of preventing oxidation; the other, to prevent splitting of undesirable fatty acids. In addition to eliminating rancidity, odors, and discoloration, Phosphamizing is said also to assist in obtaining better penetration and a softer hand, in maintaining constant lubricity, and in preventing change in film form.

•

## *Warp Sizing Compound for Cellulose Acetate*

Development of a new sizing material for acetate and other synthetic warp yarns has been announced by E. F. Houghton & Co., Philadelphia. The announcement states that this size, branded Houghto-Size A.C., was originally developed for use by one of the world's largest producers of acetate yarn. The new product is a buff-colored, granular powder, possessing a moist feel, due to the various oils, penetrants, and softeners incorporated in it. It is soluble in hot water, but should not be heated to more than 180° F. It contains no starches, gums, or dextrins, and is said to be extremely easy to remove in the boil-off. One of the components of the size is a preservative to prevent its alteration by mold, mildew, or development of rancidity.

•

## *Emulsifying Agents*

Two new emulsifying agents, Avirol OS and Avirol WS, have been announced by the Dyestuffs Division, E. I. du Pont de Nemours & Co., Wilmington, Del. Avirol OS is an oil-soluble compound, while Avirol WS is wax-soluble. Both products are described as being entirely stable to atmospheric oxidation. It is also stated that they will not become rancid and that they exhibit excellent working properties. Avirol OS is recommended for preparing emulsions of animal, vegetable, and mineral oils; and Avirol WS is suitable for the emulsification of paraffin wax; animal waxes, such as bees-wax and spermaceti; and vegetable waxes, such as carnauba and Japan wax.

•

## *Mothproofing Compound*

A new product of the Eulan series, Eulan CN, is announced by General Dyestuff Corp., 230 Fifth Ave., New York. Eulan CN is applied from a boiling acetic, formic, or sulphuric acid bath and can be used in combination with acid, Palatine Fast, chrome or monochrome colors. Application of 1½ lb. of this product to 100 lb. of wool is said to produce a lasting protection against moths, which is not influenced by exposure to light, water, washing, hot pressing, perspiration, sea water, stoving, chlorine, peroxide bleaching, potting, decatizing, moderate fulling, and dry-cleaning. For protection against the carpet beetle it is advisable to increase the amount to 2 lb. per 100 lb. material.

•

## *Association Notes*

February meeting of New York Section of the American Association of Textile Chemists and Colorists was held Jan. 31 at Paterson, N. J. Dr. I. H. Godlove, of E. I. duPont de Nemours & Co., spoke on the subject "Color: Visually and Physically." John Tuomey of the Color Instrument Corp., 220 W. 42nd St., New York, demonstrated the Chrometrigraph, an instrument for measuring and specifying color.

At the regular meeting of National Association of Textile Printing Colorists held Feb. 1 in Paterson, James Purcell of National Aniline Co. discussed the latest developments in dyes for printing.

•

## *Change Duty Rate on Swiss Dyes*

One of the important features of interest to the finishing industry in the recently concluded reciprocal trade agreement between the United States and Switzerland is the reduction in our duty rates on various dyes imported from Switzerland. The reduction affects coal-tar colors, dyes, and stains. Under the 1930 act such products were under a duty of 7c. per pound and 45% ad valorem, while the new agreement provides that such dyes shall be subject to an ad valorem duty of 40% with the specific rate eliminated.

•

## *New Dyes*

General Dyestuff Corp. announces the following new products:

Diazo Olive GA, a developed color, which produces easily dischargeable olive shades of good fastness to light on cotton or rayon when developed and diazotized with Developer A; Chrome Yellow A extra, a chrome color, applied by the after-chrome or the chromate method for producing bright greenish yellows of very good fastness to light and fulling; Celliton Fast Blue FFB, at level-dyeing acetate color, yielding clear blue shades of good to very good all-round fastness; and Celliton Red BB, an acetate color, suitable for dyeing or direct printing, yielding full bluish red shades of good all-round fastness.

•

## *Processing Plant News*

**Canton** (Ga.) **Cotton Mills** have installed a second Super-Sanforizing machine built by the Textile-Finishing Machinery Co., Providence, R. I. A new method of drive is utilized.

**Eagle & Phenix Mills,** Columbus, Ga., have recently installed a Super-Sanforizing machine built by Textile-Finishing Machinery Co. of Providence, R. I.

**Rising Sun Dye Works,** Philadelphia, Pa., recently organized by Solveb Goldstein, Thomas Hutchison, and associates, has leased space in building at 2440 N. Orianna St. for new dye and finishing plant.

**Cranston Print Works Co.,** Cranston, R. I., has reopened former mill of S. Slater & Sons, Inc., East Webster, Mass., recently acquired for a branch plant. Property consists of a group of eight buildings and will be developed to large capacity by new owner. Auction sale on Jan. 17 of certain machinery in the East Webster plant brought $80,000 for 220 lots. The Slater office has been removed to the North Webster plant.

**Richmond** (Va.) **Piece Dye Works,** of which Leslie Thorn is vice-president, is remodeling the former Simmons mattress property at Third and Hull Sts., South Richmond. Conrad Wirth, of Zurich, Switzerland, is president. Machinery is being shipped in from a plant in New Jersey.

•

## *Processing Financial*

**Trescott Dye Works, Inc.,** Los Angeles, Calif., have been chartered with capital of $50,000, to operate a local dyeing and finishing mill. Incorporators include L. S. Graham and J. G. Rowe, both of Los Angeles.

**Jewett City** (Conn.) **Textile Novelty Co.,** has secured permission from the United States District Court, to reorganize under the new Federal bankruptcy laws.

**Cretona Print & Dye Works, Inc.,** Clifton, N. J., petitioned into bankruptcy Jan. 10, are said to have liabilities of $800,000 and assets of about $100,000. The company was approved for a loan of $450,000 from the RFC last July.

**Audubon Piece Dye Works, Inc.,** Paterson, N. J., recently organized with capital of 100 shares, no par value, plans operation of local dye and finishing mill. New company is represented by Abram I. Bluestein, 126 Market St., Paterson.

**Finco Dye & Print Works,** Leonard & Scholes Sts., Brooklyn, N. Y., has filed reorganization petition under Section 77B.

## PROCESSING IN THIS ISSUE


| | page |
|---|---|
| Chemicals and Wool—Effect on Tensile Strength | 70 |
| Finisher Gets More Steam with Automatic Stoker | 77 |
| Vat Dye Penetration Improved by Unorthodox Means | 78 |
| Permanganate-Ammonia Prints on Wool | 82 |
| Rules to Obtain Color Harmony and Avoid Discord | 83 |
| Deposit on Soaked Silk | 94 |
| Linen Is Stained | 95 |
| Induced Draft Tenter Dryer | 98 |
| Color Analyzer | 98 |

TEXTILE WORLD'S

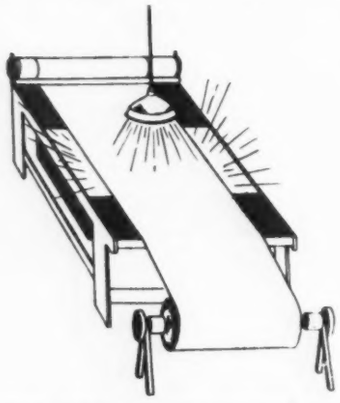
# Engineering Digest

DUE partly to stormy weather and partly to lack of advance publicity, the attendance at the meeting of the Textile Division of the A. S. M. E. held in New York last month was negligible. Consequently, all but a few men in the industry lost an opportunity to hear an excellent presentation of recent advances in textile-mill paint-engineering. For the benefit of the great majority, we are glad to be able to present an abstract of this paper, commencing on page 80 of this issue.—*Editor.*

## *Proper Lighting Is Modern Trend In Manufacturing*

Applying light to inspection operations with care and planning that considers the character of the product, the specific working facilities and the seeing comfort of the worker is an important trend in modern manufacturing, according to Richard G. Slauer, illuminating engineer, Westinghouse Lamp Co., who presented a paper on the subject at the annual meeting of the Illuminating Engineering Society held last fall in Cincinnati, Ohio. The problem of inspection lighting should be viewed from several different angles, he said, emphasizing six factors which embrace the problem, viz.: composition, finish, form, internal structure, surface contour, and color.

With particular reference to textile inspection lighting problems he said that color, as an inherent characteristic of most objects, is an important factor in inspection practice. Where color variations are great, they generally indicate improper assembly, foreign substance, or faulty operating methods. Where differences are slight, as in weaving, the spectral composition of inspection light is critical. The proximity which artificial light should approach daylight color depends entirely upon the industry and the importance of an exact match. Daylight blue lamps, or their equivalent, are a step in the right direction and in many cases are satisfactory.



**Cloth Inspection—The overhead unit shows up general surface defects, the silhouette lighting outlines knots and broken threads. Separate control of these two forms of lighting facilitates the work of the inspector.**

Inspection for form, or physical outline, usually calls for diffused light, except for small objects which are inspected best with silhouette lighting, Since, in silhouette lighting, the inspector must look directly at the light source, one of low brightness is essential to his eye comfort. Diffusing the light source will help, but too much diffusion will destroy a sharp outline. Textiles and other products are inspected efficiently under different forms of silhouette lighting.

The background of the inspection point bears an important relationship to annoying glare, at the same time affecting the ease of inspection. As a general rule, white background should be avoided. Whether the intensity is 10 or 20 foot-candles, a white background reflects more light than the object itself, and thus produces annoying glare. The smaller the object, or the total area of objects, in proportion to the background, the harder it is to distinguish surface details. Shiny surfaces, such as waxed or oiled wood, glass, and glossy paints, are therefore undesirable as backgrounds. A green or brown mat finish is most often the best, since both colors are used by nature for its normal backgrounds, and thus give a restful eye reaction.

•

## *Preventive Maintenance Vital Function of Maintenance Dept.*

The cost of lost production time due to a breakdown and its repair should be added to the cost of the repair and the entire amount charged to the maintenance department, is the belief of one of the executives quoted in "The Maintenance Department," a report recently issued by the Policyholders Service Bureau, Metropolitan Life Insurance Co. Other equally suggestive comments, particularly concerning practices and procedures, are quoted in this new report, which is the result of a survey of the practices of several representative companies. Organization, operation, and control methods are discussed in usable detail.

Preventive maintenance is listed as being one of the foremost of the various functions of maintenance departments. The report states that a popular procedure in carrying out a plan of preventive maintenance is the use of inspection report cards containing lists of items that must be checked. In a number of cases, the inspector's report is in the form of a work order, having space for a description of the work to be done, estimate, actual cost, and essential information concerning start and completion of repairs. This form and a number of others, are reproduced in facsimile in the report.

Under the heading "The Control of Maintenance Work," the report discusses budgets, order systems, schedules, authorization, and wage-incentive plans. The budgeting of maintenance work, states the report, is based upon past experience, estimated increase in maintenance cost due to age of equipment, estimated reduction in maintenance cost due to preventive maintenance, and the forecast of volume of production for the next budget period. As in other parts of the report, the actual practices of representative manufacturers are cited in some detail.

•

## *Heating & Ventilating Show Well Received*

The Fourth International Heating & Ventilating Exposition was greeted enthusiastically by engineers from all parts of the industrial world when it threw open its doors from Jan. 27 to 31 at the International Amphitheater, Chicago. Exhibits included the latest developments in the heating, ventilating, and air-conditioning industries, and related fields. The American Society of Heating & Ventilating Engineers and the National Warm Air Heating & Air Conditioning Association held meetings in Chicago to coincide with the exposition.

Products shown included combustion apparatus, hydraulic apparatus, steam-heating equipment, hot-water heating systems, ventilating and air-conditioning apparatus, control appliances, refrigerating group, district heating group, insulating group, electrical equipment and specialties, and metals and alloys.

•

## *What Cost Accidents?*

Those who view President Roosevelt's relief fund of $4,880,000,000 as an astronomical figure have also another astronomical figure to consider: According to an estimate of the National Safety Council, accident costs in 1934 were $3,500,000,000. Another figure to give pause is that there were 101,000 fatal accidental deaths in 1934, as estimated in *Industrial Standardization.* If all States had kept as low a rate as the 53 per 100,000 population reported in Rhode Island, primarily an industrial State, there would have been 34,000 fewer accidental deaths in the nation last year.

Such figures lend impetus to the unspectacular, but valuable, work done by the American Standards Association in prompting safety codes and to the efforts of many textile mill safety committees.

•

## *Industrial Tires*

A 24-page "Handbook of Industrial Tires" has been published by B. F. Goodrich Co., Akron, O[illegible]. First pages are devoted to reviews of tests comparing the effect of rubber and steel tires

on floors. Other pages offer hints on selection of tires for particular jobs, ways to handle change-overs, types of rubber compounds, etc.

According to Goodrich engineers, one test consisted of running a steel wheel and a rubber-tired wheel on slabs of concrete at 635 ft. per minute under a 383-lb. load. In 44 min. the steel wheel had badly worn the concrete flooring; in 46 hours the rubber-tired wheel had not marred the surface, and the tire itself showed very little wear. Another test on smooth wood floors showed a drawbar pull necessary to start a rubber-tired trailer to be 60% less than that required to start a steel-wheeled trailer. Draw-bar pull necessary to keep the trailer in motion was 31.4% less for the rubber-tired trailer. A third test showed that rubber-tired wheels rolled over ⅜ in. obstructions 79.5% easier than steel wheels. Furthermore, rubber-tired wheels rolled over a film of sand on wood 70.5% easier than steel wheels.

•

## *Engineering Briefs*

**A flexible form** of laminated cloth is announced by the Revolite Corp. in the *Bakelite Review*. Flexibility is said to be greater and laminations as thick as ⅛ in. may be bent over a ¼-in. bar without cracking. Product claims to have sound-deadening and resilient qualities obtained by laminating a flexible sheet to a piece of rubber, and not subject to disadvantages of rubber when exposed to temperatures of 150° C. Uses: acid-proof linings, diaphragms, packing plates, gaskets, roller coverings for finishing machines, and belting.

**Film Strength of Lubricants**—Bulletin No. 5 discussing the film strength or load-carrying property of a lubricant was issued recently by Industrial Lubrication Council, Inc., 51 E. 42d St., New York. Topics discussed are (1) adsorbed metal-oil monomolecular film on the bearing, (2) layers of lubricant as related to the bearing surface, (3) liquid lubricant carrier or matrix, (4) layers of lubricant as related to the shaft surface, and (5) adsorbed metal-oil monomolecular film on the shaft.

**Safety Contest**—Western North Carolina Safety Council, in cooperation with the North Carolina Industrial Commission, has launched a safety contest among manufacturing plants of the western half of the State. Trophies will be awarded plant organizations that maintain the lowest frequency rate of accidents, and to the plant showing the greatest individual reduction in accidents during the contest, which ends Nov. 1, 1936.

•

## *Engineering Trade News*

**Sheffler-Gross Co.**, Drexel Bldg., Philadelphia, sales engineers, has taken on the account of **Julien P. Friez & Sons, Inc.**, Baltimore, Md., manufacturers of the Friez line of instruments, which includes humidistats, thermostats, and recording devices for relative humidity and temperature. This arrangement went into effect Jan. 1, 1936.

**Robert B. Skinner** has resigned his position as secretary and sales manager of the **Skinner Chuck Co.** to become associated with Lucius E. Whiton, president of D. E. Whiton Machine Co., New London, Conn., manufacturers of chucks, centering machines, gear cutting machines, castings and steam turbines. Mr. Skinner, who will be general manger and vice-president of the Whiton company, has been in the chuck business for many years, entering the factory shortly after leaving school. He has taken an active part in associational work and civic affairs. The Skinner-Whiton union is for the purpose of offering the most efficient service possible to chuck users.

**International Nickel Co., Inc.**, announces the addition of Thomas N. Armstrong, Jr., to its technical staff, according to A. J. Wadhams, manager of development and research. Mr. Armstrong, a graduate of the University of Kentucky, was formerly associate metallurgist at Norfolk Navy Yard, Portsmouth, Va., and prior to that was for several years with Andrews Steel Co., Newport, Ky. He will handle steel castings development for the company and operate out of the New York office.

**Pyrene Mfg. Co.**, Newark, N. J., announces that Charles G. Durfee, for the last four years manager of the systems department, has been appointed assistant to the vice-president in charge of sales, Edward G. Weed.

**Container Service Co.**, Reading, Pa., has been granted a charter to deal in boxes and cartons, capital stock being listed at $50,000. The incorporators, Irvin A. Diener, John B. Diener, and Paul A. Diener, are affiliated with a number of Pennsylvania knitting mills and other textile concerns.

**Central Foundry** has removed its Pacific Coast sales office from San Francisco to Oakland, Calif., at 278 Fourth Street. John Ponsaing, district sales manager; and E. A. Keithley and K. P. Hughes, sales representatives, will make their headquarters at this new office.

**Buensod-Stacey Air Conditioning, Inc.**, 60 East 42d St., New York, was recently organized to operate as a personal service group in the air-conditioning contracting field. Officers are A. C. Buensod, president, Alfred E. Stacey, Jr., vice-president, M. S. Smith, treasurer, and H. W. Marshall, secretary.

**Republic Steel Corp.** removed its general offices on Jan. 25 from Youngstown, Ohio, to Cleveland, Ohio. The offices will occupy floors 13 to 16 inclusive in the former Medical Arts Bldg., recently renamed the Republic Bldg. The move consolidates the general offices which have been located in Youngstown, the executive and Cleveland district sales offices formerly in the Union Trust Bldg., Cleveland, and the Advertising Dept., Massillon, Ohio. Sales offices of the Newton Steel Co. will also be located in the Republic Bldg., Cleveland. Sales offices of the Alloy Steel Division of Republic will remain in Massillon, Ohio.

**Chain Link & Ornamental Steel Division of Continental Steel Corp.**, Kokomo, Ind., has appointed O. R. Brainard, 1949 East 7th St., Charlotte, N. C., as direct sales representative for North and South Carolina. The company announces expanding business in the South due to the many exclusive construction features and protection developments in its line of fencing.

**James O. McKinsey & Co.**, Chicago, a management counsel firm founded by Mr. McKinsey and headed by him until he became chairman and senior executive officer of Marshall Field & Co. in October, 1935, recently announced that its management engineering practices and those of Scovell, Wellington & Co. have been merged under the name of Kinsey, Wellington & Co. Scovell, Wellington & Co. will continue as a separate corporation in order to carry on the accounting practices of the two firms.

•

## *Engineering Mill News*

**Springs Cotton Mills**, Eureka (S. C.) plant is remodeling its boiler room; a passageway is being constructed to give more space for roving machinery and five apartment houses for employees are being erected.

**Winnsboro** (S. C.) **Mills** is building seven new apartment houses in its village to accommodate 14 families.

**Martel Mills Corp.**, Lexington, S. C., dam, which crumpled some time ago during a heavy rain, damaging the mill, is being rebuilt.

**Peerless Woolen Mills'** recreation building, Chattanooga, Tenn., 110x60 ft., with gymnasium equipment, and stage and a seating capacity of 700 persons, was recently dedicated with appropriate exercises, at which J. M. McCallie, headmaster of the McCallie School, at Chattanooga, was principal speaker.

**Riverside & Dan River Cotton Mills, Inc.**, Danville, Va., has provided the top floor, fully equipped, of one of its plants to be used as a textile high school, recently approved by the Danville school board. W. D. Vincent, formerly of Great Falls, S. C., and a Clemson College graduate, is the principal.

## ENGINEERING IN THIS ISSUE


| | page |
|---|---|
| Finisher Gets More Steam with Automatic Stoker... | 77 |
| New Painting Techniques Effect Mill Economies.... | 80 |
| Vibration Damper ..... | 98 |
| Lighting Unit ..... | 98 |
| Magnetic Contactor ..... | 98 |
| Feedwater Heater ..... | 99 |

# Business News

**H. W. Butterworth & Sons Co.,** Philadelphia, announce that Harry W. Butterworth, Jr., has been elected president to succeed his uncle, the late Albert W. Butterworth. The following elections have also been announced: Harry W. Butterworth, Sr., chairman board of directors; J. Ebert Butterworth, executive vice-president and treasurer; Henry W. Butterworth, vice-president; DeHaven Butterworth, vice-president; and James Butterworth, 2nd, secretary and assistant treasurer. All of the above are directors of the company; the directorate also includes J. Warner Butterworth.

**Ciba Co., Inc.,** has closed its Greensboro, N. C., office and opened a new branch office at 1517-23 Hutchison Ave., Charlotte, N. C.

**Stehedco Development Division** of the Steel Heddle Mfg. Co. (general offices and main plant in Philadelphia, Pa.) is a new company. This new enterprise will be operated independently at 268 McDonough Boulevard, Atlanta, Ga., and will concentrate its manufacture on twister rings and other similar items for the spinning industry, particularly an improved self-oiling twister ring with exclusive patented features, and also travelers. Ralph Ragan is in charge of this new company, assisted by H. Raiford Gaffney in the selling of the product.

**Union Special Machine Co.,** Chicago, has made several recent changes in its sales organization as follows: In the Philadelphia office territory which is under the direction of T. M. Murphey, an additional representative, J. M. Keasler, has been assigned to city territory. C. R. Spencer, who has been located at Pottsville, Pa., is now making his headquarters in Philadelphia, where he is assigned to city territory. At Pottsville, Mr. Spencer has been succeeded by Louis Perrin, who had been in the Philadelphia office many years prior to 1931. In Boston, George M. Ide has been transferred from Philadelphia to become a special representative in the Boston territory. In New York, C. H. Verdeur has been transferred from the Connecticut territory to the city territory. Mr. Verdeur has been succeeded by Paul E. Crouch.

**Terrell Machine Co.,** Charlotte, N. C., announces that Irwin P. Graham has been added to its sales force to handle Thermoid mechanical rubber goods in North and South Carolina, with headquarters at Charlotte. Mr. Graham, who received his education at Davidson College and Washington & Lee University, served for many years in clerical and executive capacities with Erwin Cotton Mills Co. He was an artillery officer during the World War.

**Carolina Aniline & Extract Co.,** Charlotte, N. C., recently announced plans to build a new plant at 2308 S. Boulevard at a cost of approximately $40,000.

**Harry L. Miller,** formerly vice-president and technical director of the Quaker Chemical Products Corp., Conshohocken, Pa., has resigned his position with that company to form the Haas-Miller Corp., 4th and Bristol Streets, Philadelphia. Mr. Miller was connected with the former company for 16 years. He will continue to manufacture textile oil products.

**Engineering Sales Co.,** Charlotte, N. C., has been appointed North and South Carolina sales representative for Elwell-Parker Electric Co., Cleveland, Ohio, manufacturers of industrial electric trucks. Other lines handled by this company include Standard conveyors, Barrett lift trucks, Kewanee coal conveyors, Nutting floor trucks, wheels and casters.

**Mutual Waste Co.,** Charlotte, N. C., handlers of textile waste products, has moved into new and larger quarters in the Bryant Bldg., 411½ S. Tryon St. R. K. Arnold is head of the firm.

**Sterling Ring Traveler Co.,** Fall River, Mass., has added D. J. Quillen to its southern sales organization. He will work with George W. Walker, southern representative, and the two will cover the entire South, with Spartanburg, S. C., as headquarters. Mr. Quillen for many years was overseer of spinning at Clifton (S. C.) Mfg. Co., and later held similar positions at Whitney (S. C.) Mfg. Co. and Tucapau (S. C.) Mfg. Co. More recently, he was with Charlotte Supply Co. in a sales capacity.

**Commercial Factors Corp.,** New York, announces that Konrad F. Braun, vice-president, has been made assistant to the president. Andrew W. Hamilton, assistant credit manager, has been appointed to full charge of credits.

# New Publications

**Rayon and Synthetic Yarn Handbook** — Second Edition; E. W. K. Schwarz and H. R. Mauersberger, Rayon Publishing Co., New York. $3.75.

That the original edition of this handbook, which appeared a little less than two years ago, filled a real need is evidenced by the fact that the supply of copies is now entirely exhausted. In the present edition, several of the sections have been rewritten and enlarged, and considerable new material has been added. C. C. Hubbard has contributed a chapter on drycleaning of rayon and acetate materials, and George H. Johnson a chapter on laundering of synthetic fabrics. Descriptions of the viscose, acetate, and cuprammonium processes have been written by H. B. Vollrath, H. D. W. Smith, and Theodore Wood, respectively. Two chapters on testing were contributed by Irving J. Saxl. Stanley Hunt has completely rewritten his chapter on the statistical and economic background of the rayon industry. For readers not familiar with the first edition, mention should be made of the wealth of miscellaneous reference data, provision of which is one of the chief functions of a handbook.

**Bankruptcy in United States History;** by Charles Warren; Harvard University Press, Cambridge, Mass. 195 pages. Price $2.

The author has examined each of the previous periods of economic depression by way of vigorous debates on bankruptcy that have stirred the various Congresses at such times. He points out that one of the striking features of them all has been the increase in the scope of the demands for relief through the exercise by Congress of its power under the bankruptcy clause of the Constitution. This new method of approach will make the book of interest to the general reader of history as well as to the student of economics and to the lawyer.

## *Many Firms Reserve Space for Greenville Machinery Show*

Three-fourths of available floor space in the Textile Hall has been sold in anticipation of the 1937 Southern Textile Exposition, which will be held April 5 to 10, 1937, according to an announcement by W. G. Sirrine, president of the Textile Hall Corp. A large number of firms have already made reservations.

## *At Work on Textile Teaching Material*

To improve their teaching material on technical textile subjects, a committee of the textile school deans met in Washington, D. C., recently with officials of the Textile Foundation. Those present were: W. D. Fales of the Rhode Island School of Design; Henry W. Nichols of Bradford-Durfee Textile School; C. A. Jones of Georgia School of Technology; H. H. Willis of Clemson College; F. M. Feiker, who is acting for the Foundation in correlating the work, and E. T. Pickard, secretary and assistant treasurer.

Under a grant made by the Foundation, material on the subject of carding was collected and organized by H. H. Willis, in cooperation with the deans of the other textile schools. This material is in the process of being further improved.

The committee agreed to go forward with similar text material on the following subjects related to cotton manufacturing: (1) cotton classification; (2) opening and picking; (3) drawing and roving frames; (4) combing; and (5) spinning. It is expected that some of the text will be ready for use for the fall term 1936.

At the same meeting the committee decided to start work on one or two wool manufacturing subjects, and the selection of the particular courses was left for decision with Mr. Fales and Charles H. Eames of Lowell Textile Institute.

Another group of courses which the deans are anxious to have made available is in the field of textile economics and the Textile Foundation has been asked to sponsor the collection and presentation of suitable material.

## *R. L. Rogers Heads N. C. Students' Textile Show*

Robert L. Rogers of Oakboro, N. C., a member of the Senior class, has been elected superintendent of the Annual Students' Textile Exposition which will be held at the Textile School of North Carolina State College on April 23. Mr. Rogers is a son of B. M. Rogers, superintendent of the Oakboro Cotton Mills.

Assistant superintendent for the school exposition is R. C. Going, Fieldale, Va. Foremen for various departments follow: J. D. Moore, Forest City, N. C.; W. P. Banner, Greensboro, N. C.; D. A. McCanless, Asheville, N. C.; Carl Wynn, Spindale, N. C.; A. E. Shumate, Leaksville, N. C.

## *NRDGA Celebrates Ith 25th Birthday*

Retailing problems of 1911 were contrasted with those of 1936 at the silver jubilee convention and celebration of the National Retail Dry Goods Association, held Jan. 20 to 24 at the Pennsylvania Hotel, New York. Among sessions of interest to textile manufacturers was the "Men's Clothing and Furnishings" meeting, Jan. 22, at which "More Fashion in Men's Wear" was discussed by W. H. Weintraub, publisher of *Esquire*.

## *Wholesalers Urged to Cooperate With Mills*

The need for better relations with textile manufacturers was highlighted by Flint Garrison, managing director, in his annual address at the convention of the Wholesale Dry Goods Institute, Jan. 15, in New York. Mr. Garrison said that many manufacturers had endorsed the Institute's policy of classifying the manufacturing groups according to their selling policies, and that relations between the jobber and his sources of merchandise were improving steadily. The convention elected Eugene B. Sydnor, president, Richmond (Va.) Dry Goods Co., as president of the Institute for 1936. The need for closer cooperation with manufacturers also was stressed by C. D. Southard, of Butler Bros., Chicago.

## *Technologists Elect*

The Association of Textile Laboratories and Technologists at its January meeting elected the following officers for 1936: president, Harry Levine, of the Silk Grading and Testing Laboratory; vice-president, Ernest Doute, of Eichman & Hecht; secretary-elect, Bernice Bronner, of Brown Durrell Co.; treasurer, Charles Keller, of the A.A.A. Silk Laboratory; director, Herbert Hatch of Hatch & Reutlinger.